975/2

Vol. 975 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

October 10, 1978

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

October 10, 1978 Volume 975 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) Implementation: Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of May 16, 1978.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 2, 1978.

Board of Appeals Decisions Rendered in the Month of August 1978

Affirmed	227
Affirmed in Part	27
Reversed	77
Total	331

United States Patent and Trademark Office Before the Commissioner of Patents and Trademarks

IN RE ANTHONY J. CASTORINA, RESPONDENT
PROCEEDING UNDER 35 U.S.C. § 32 and 37 CFR § 1.348

Final Order

On June 20, 1978, the Solicitor filed charges against respondent. The charges were served upon respondent by mail at his addresses of record with the Committee on Enrollment. The time for filing a response to the charges has expired and no response has been received. Accordingly, it is hereby ordered that Anthony J. Castorina, of Arlington, Virginia, whose registration number is 21,118, is excluded from further practice before the U.S. Patent and Trademark Office.

This action is taken under 35 U.S.C. § 32, 37 CFR § 1.348, and 37 CFR § 2.16.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Dated: August 2, 1978.

April-June 1978 Classification Orders

The reclassifications covered by the following classification changes became effective between March and June 1978.

	Class	*Subclasses*
Classification Order 625, effective April 3, 1978:		
Abolished	156	244.
Established	156	244.11-244.19; 244.21-244.27.
Classification Order 626, effective April 5, 1978:		
Abolished	60	39.61.
	123	8.01-8.49.
Established	123	200-249.
Classification Order 627, effective April 7, 1978:		
Abolished	4	118; 131.
	110	1; 3; 3.5; 5-81; 4; 82-100.
Established	4	111.1-111.6.
	110	185-349.
Classification Order 628, effective April 11, 1978:		
Abolished	106	14.
Established	106	14.05; 14.11-14.18; 14.21-14.29; 14.31; 14.33-14.39; 14.41-14.45.
Classification Order 629, effective April 25, 1978:		
Abolished	220	9-17; 63-65.
	229	14.
Established	220	18.1; 70.1; 72.1; 400-470. Cross reference art collection. 900 and 901.
Classification Order 630, effective May 11, 1978:		
Abolished	260	617-643.
Established (New)	568	700-923.
Classification Order 631, effective May 30, 1978:		
Abolished	260	250-268.
Established	544	224-410.
Classification Order 632, effective May 31, 1978:		
Abolished	197	ALL.
Established (New)	400	1-719. Cross reference art collection. 900-904.
Classification Order 633, effective June 19, 1978:		
Abolished	102	70-86.5.
Established	102	200-281.
Classification Order 634, effective June 19, 1978:		
Abolished	280	106; 106.5.
Established	280	781-800.
Classification Order 635, effective June 28, 1978:		
Abolished	23	Digest 1-28.
Established	23	Cross reference art collection. 901-933.

ALFRED C. MARMOR,
Administrator for Documentation,

July 27, 1978.

Patent Suits

Notices under 35 U.S.C. 290: Patent Act of 1952

3,097,331, J. Miller, TWO SPEED MOTOR, **filed** Apr. 18, 1978, D.C. Ariz. (Phoenix), Doc. C78-322-PhX, *J. Vance Miller et al.* v. *Goettl Bros. Metal Products, Inc.*

3,134,718, A. Nobile, PREGNA-1,4-DIENES AND COMPOSITIONS CONTAINING SAME, **filed** Mar. 15, 1978, D.C. Md. (Baltimore), Doc. Y-78-434, *Schering Corporation* v. *D-M Pharmaceuticals, Inc.* Voluntary dismissal, May 2, 1978.

3,234,436, J. J. Bieger, ROTARY ELECTRO MAGNETIC ACTUATOR, **filed** Apr. 26, 1978, D.C.N.J. (Newark), Doc. C-78-880, *Alois Stauber, doing business as DACO Instrument Co.* v. *William Henninger, doing business as Aero Design & Development Co.*

3,486,495, H. W. Allen, ARCHERY BOW WITH DRAW FORCE MULTIPLYING ATTACHMENT, **filed** Jan. 26, 1978, D.C., N.D. Okla. (Tulsa), Doc. 78-C-43, *Allen Archery, Inc.* v. *Brunswick Corporation.* Plaintiff's complaint in this action is merged into this consent judgment and decree, Apr. 25, 1978.

3,540,684, C. G. McGee, SLIDE CALCULATOR FOR DIRECT ADDITION AND/OR SUBTRACTION OF INTEGER QUALITIES IN TWO NUMBER SYSTEMS, **3,866,862,** Stephen L. Snyder, RISER CONTROLS FOR GLIDING PARACHUTES, **filed** Aug. 31, 1977, D.C.N.J. (Camden), Doc. C-77-1812, *Stephen L. Synder* v. *North American Aerodynamics, Inc. and John P. Higgins.* Order of dismissal without prejudice, Apr. 28, 1978.

3,587,177, Overly and Pagel, AIRFOIL NOZZLE, **3,629,952,** same, AIRFOIL WEB DRYER, **filed** Mar. 25, 1975, D.C., E.D. Wis. (Milwaukee), Doc. 75-162, *Overly, Inc.* v. *Tec Systems, Inc.* Stipulated judgment dismissing action with prejudice, Oct. 11, 1977.

3,596,954, B. A. Hull, UNIVERSAL SLIDING DOOR HANDLE AND LATCH ASSEMBLY. **filed** Mar. 24, 1978, D.C., C.D. Calif. (Los Angeles), Doc. CV78-1132 MML, *W & F Mfg., Inc.* v. *Reflectolite Products, Inc.*

3,620,448, C. L. Nelson, CLOCK THERMOSTAT SYSTEM, **filed** Apr. 4, 1978, D.C. Minn. (Minneapolis), Doc. 4-78-C-141, *Honeywell Inc.* v. *Robertshaw Controls Company.*

3,623,353, D. Dinerman, VEHICLE FRAME STRAIGHTENING INSTALLATION, **filed** Apr. 4, 1978, D.C., S.D. Ga. (Savannah), Doc. CV478-65, *Dinerman Equipment Mfg.* v. *Grainger Auto Parts.*

3,629,952. (See 3,587,177.)

3,658,459, J. A. Gartlan, ABSORBENT FOR PURIFYING DRY-CLEANING SOLVENTS, **filed** Apr. 13, 1978, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 78-1248, *Pursol Chemical Corp.* v. *Kleen-Rite Inc., doing business as Kleen-Rite/Arundale Corp.*

3,661,144, Jensen and Jensen, SUCTION APPARATUS FOR BODY CAVITIES, **filed** Feb. 23, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78-0409-CFP, *A/S Ferrosan* v. *Berkeley Bio-Medical Inc.*

3,667,170, J. H. MacKay, FINISHING ARTICLE AND SUPPORT MEMBER THEREFOR, **filed** Apr. 21, 1978, D.C., N.D. Ohio (Cleveland), Doc. C-78-474, *Standard Abrasives, Inc.* v. *Merit Abrasive Products, Inc.*

3,679,512, F. W. Macone, LAMINATED CARD ENVELOPES, **filed** Aug. 3, 1977, D.C. Mass. (Boston), Doc. 77-1349, *Avant Incorporated,* v. *Polaroid Corporation.* The judgment of the District Court is affirmed, 3-21-78.

3,711,871, M. H. Sherin, SANITARY LIQUID SPECIMEN COLLECTOR; D. 227,413, same, FUNNEL FOR A SANITARY SPECIMEN COLLECTOR, **filed** Apr. 21, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c1549, *Sage Products, Inc.* v. *Premium Piastics, Inc.*

3,757,087, R. F. Fleming, RECORDER INDEXING APPARATUS WITH A CUMULATIVE INDICATION OF THE AMOUNT OF TAPE WITHDRAWN FROM THE SUPPLY REEL, **filed** Mar. 30, 1978, D.C.N.J. (Newark), Doc. 78-647, *Interdynamics, Inc. et al.* v. *Firma Wolf et al.*

3,780,226, S. W. Jacobson, TELEPHONE ANSWERING APPARATUS; **3,909,537,** same, **filed** Apr. 20, 1978, D.C. Mass. (Boston), Doc. CA78-0886-S, *Tandy Corporation, doing business as Radio Shack and Sava Jacobson* v. *Lafayette Radio Electronics Corporation.*

3,866,862. (See 3,540,684.)

3,869,608, S. A. Scherbatskoy, NUCLEAR WELL LOGGING, **filed** Feb. 8, 1978, D.C., W.D. Okla. (Oklahoma City), Doc. 78-0104-T, *James D. Fellers of Fellers, Snider Blankenship and Bailey* v. *Gearhart-Owen Industries, Inc.* Action dismissed by plaintiff, Apr. 19, 1978.

3,894,530, Drdik and Dardik, METHOD FOR REPAIRING, AUGMENTING, OR REPLACING A BODY CONDUIT OR ORGAN; **3,974,526,** same, VASCULAR PROSTHESES AND PROCESS FOR PRODUCING THE SAME; **3,988,782,** same, NON-ANTIGENIC, NON-THROMBOGENIC INFECTION-RESISTANT GRAFTS FROM UMBILICAL CORD VESSELS AND PROCESS FOR PREPARING AND USING SAME, **filed** Apr. 18, 1978, DC.N.J. (Newark), Doc. 78-804, *Israel Schechter and Yeda Research Development Co., Ltd.* v. *Irving Dardik, Herbert Dardik, and Meadox Medicals, Inc.*

3,897,879, L. Bubik, VEHICLE TOWING APPARATUS, **filed** Apr. 20, 1978, D.C., C.D. Calif. (Los Angeles), Doc. C78-1543-LTL, *Vulcan Equipment Company* v. *Aubry Nowell.*

3,906,630, S. G. Megna, SCISSORS, PARTICULARLY HAIRDRESSER'S SCISSORS, **filed** Sept. 8, 1977, D.C., M.D.N.C. (Greensboro), Doc. C-77-423-WS, *Diane Products, Inc.* v. *Jeffco Inc.* Stipulation and order dismissing this action on Apr. 28, 1978.

3,908,904, Kerner, Mahler and Peters, ULTRASONIC ATOMIZER FOR WASTE SULFURIC ACID AND USE THERE IN ACID CRACKING FURNACES, **filed** Oct. 14, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c3444, *Penntube Plastics Co.* v. *Sweetheart Cup Co.* Stipulation, motion to dismiss case without prejudice, Sept. 14, 1977.

3,909,537. (See 3,780,226.)

3,966,178, Stevens and Stevens, COMBINATION GRAIN MILL AND DOUGH MIXER; **4,037,797,** same, GRINDING MILL, **filed** Apr. 17, 1978, D.C. Utah (Salt Lake City), Doc. C-78-0133, *Mill & Mill, Inc.* v. *Stonemill & Mixer, Inc. and Burke G. Stone, Sr.*

3,972,207, J. Vinas, SELECTION DEVICE FOR THE NEEDLES OF A KNITTING MACHINE, **filed** May 18, 1977, D.C., S.D.N.Y., Doc. 77-C-2454, *Vinatex Knitting Systems, Inc.* v. *Jumberca (U.S.A.) Inc. et al.*

3,974,526. (See 3,894,530.)

3,988,782. (See 3,894,530.)

3,999,748, W. H. Huggins, EPILATOR, **filed** Oct. 11, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c3754, *Glovemakers, Inc.* v. *Harben Company.*

4,037,418, J. I. Hannan, LOAD SUPPORTING BEARING PLATE, **filed** May 1, 1978, D.C., N.D. W. Va. (Elkins), Doc. 78-0078-E, *Phillips Stamping Co., Inc.* v. *Jenmar Corporation.*

4,037,797. (See 3,966,178.)

4,074,311, Tanner and Rist, TELEVISION SECURITY SYSTEM, **filed** Apr. 24, 1978, D.C., N.D. Tex. (Dallas), Doc. CA3-78-478-D, *Tanner Electronic Systems Technology* v. *Tocom, Inc.*

4,082,193, J. Teague, PIPE HANDLING APPARATUS, **filed** Apr. 4, 1978, D.C., W.D. La. (Shreveport), Doc. 780383, *Leroy SaSalle and A. C. Company* v. *Carlton's Lay Down Service, Inc.*

Re. 27,357, F. G. Merser, TAG ATTACHING OR BUNDLE FASTENING DEVICE, **filed** July 11, 1977, D.C., N.D. Ill. (Chicago), Doc. 77c2484, *Dennison Manufacturing Co.* v. *Tamp Corporation.* Enter agreed order that defendant is restrained from making, using or selling any and all products, 9-19-77.

D. 227,413. (See 3,711,871.)

D. 240,819, W. Macowski, DESK CADDY, **filed** Apr. 25, 1978, D.C., S.D.N.Y., Doc. 78-C-1885 (JMC), *Ketcham & McDougall, Inc.* v. *E. Mishan & Sons.* **Same, filed** Apr. 25, 1978, D.C., S.D.N.Y., Doc. 78-C-1886 (JMC), *Ketcham & McDougall, Inc.* v. *Davor Products Importers.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,411,256, Re. S.N. 930,439, Filed Aug. 2, 1978, Cl. 52/408, ROOF CONSTRUCTION AND METHOD THEREOF, John S. Best (deceased), Owner of Record: *The Dow Chemical Company, Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 354

3,451,785, Re. S.N. 932,985, Filed Aug. 11, 1978, Cl. 23/285, PRESSURE RELIEF SYSTEM FOR PRESSURE VESSELS, Raymond G. Rohlfing, et al., Owner of Record: *Phillips Petroleum Company, Bartlesville, Okla.,* Attorney or Agent: Donald J. Quigg, et al., Ex. Gp.: 171

3,469,160, Re. S.N. 935,085, Filed Aug. 18, 1978, Cl. 361/296, ADJUSTABLE LOW-PASS CAPACITOR, John E. Johanson, Owner of Record: *Johanson Manufacturing Corporation, Boonton, N.J.,* Attorney or Agent: James J. Cannon, et al., Ex. Gp.: 212

3,588,449, Re. S.N. 934,085, Filed Aug. 14, 1978, Cl. 235/61.7 B, ELECTRONIC CHECK-CASHING SYSTEM, Thomas Glynn Paterson, Owner of Record: *RCA Corporation, Princeton, N.J.,* Attorney or Agent: Harold Christoffersen, Ex. Gp.: 211

3,763,614, Re. S.N. 931,720, Filed Aug. 3, 1978, Cl. 52/309, ROOF CONSTRUCTION, Mike Arthur Hyde, et al., Owner of Record: *The Dow Chemical Company, Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 354

3,787,092, Re. S.N. 932,048, Filed Aug. 8, 1978, Cl. 301/63 R, WHEEL WITH DROP-BASE RIM, Lorenz Weegen, et al., Owner of Record: *Kronprinz Aktiengesellschaft, Solingen-Ohligs, Germany,* Attorney or Agent: Ralf H. Siegemund, Ex. Gp.: 311

3,915,053, Re. S.N. 934,880, Filed Aug. 17, 1978, Cl. 85/7, FASTENER WITH PROPORTIONED STRENGTH LOCK GROOVES, John Howland Ruhl, Owner of Record: *Huck Manufacturing Company, Detroit, Mich.,* Attorney or Agent: Paul F. Seibold, et al., Ex. Gp.: 355

3,919,407, Re. S.N. 934,790, Filed Aug. 18, 1978, Cl. 424/12, METHOD FOR QUANTITATIVE DETERMINATION OF RENIN ACTIVITY IN BLOOD, Aurora L. Fernandez de Castro, Owner of Record: *Inventor,* Attorney or Agent: Abraham A. Saffitz, Ex. Gp.: 125

3,922,787, Re. S.N. 928,284, Filed Jul. 26, 1978, Cl. 32/14 A, PLASTIC ORTHODONTIC BRACKET, Kenneth J. Fischer, et al., Owner of Record: *Lee Pharmaceuticals, South El Monte, Calif.,* Attorney or Agent: Edward S. Irons, et al., Ex. Gp.: 333

3,948,314, Re. S.N. 922,691, Filed Jul. 7, 1978, Cl. 165/48, THERMODYNAMICALLY INTEGRALED BUILDINGS, William E. Creswick, et al., Owner of Record: *Isothermic Systems Limited, Ontario, Canada,* Attorney or Agent: Joseph A. DeGrandi, Ex. Gp.: 342

3,990,643, Re. S.N. 923,925, Filed Jul. 11, 1978, Cl. 241/24, METHOD OF PULPING AND GRADING WASTE PAPER, Walter Neitzel, Owner of Record: *J. M. Voith, G.m.b.H., Heidenheim, Germany,* Attorney or Agent: Peter K. Kontler, Ex. Gp.: 325

4,013,741, Re. S.N. 935,522, Filed Aug. 21, 1978, Cl. 261/44 R, CARBURETOR, William H. Edmonston, Owner of Record: *Lectron Fuel Systems, Inc., Troy, Mich.,* Attorney or Agent: Paul F. Serhold, et al., Ex. Gp.: 177

4,018,518, Re. S.N. 933,721, Filed Aug. 14, 1978, Cl. 352/78 R, LARGE CAPACITY FILM CASSETTE, Joseph H. Wright, Owner of Record: *Polaroid Corporation, Cambridge, Mass.,* Attorney or Agent: David R. Thornton, Ex. Gp.: 211

4,026,525, Re. S.N. 933,968, Filed Aug. 15, 1978, Cl. 254/150 R, SELF-TAILING WINCH, Maurice G. DeClercq, Owner of Record: *Inventor,* Attorney or Agent: James L. Bean, Ex. Gp.: 315

4,034,622, Re. S.N. 932,249, Filed Aug. 9, 1978, Cl. 74/501 R, INFINITELY ADJUSTABLE CABLE CONTROLLED APPARATUS AND METHOD, James R. Deck, Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.,* Ex. Gp.: 345

4,043,827, Re. S.N. 933,790, Filed Aug. 15, 1978, Cl. 106/92, SAG-RESISTANT DRY-SET MORTAR COMPOSITION, Frank E. Bernett, Owner of Record: *Tile Council of America, Inc., Princeton, N.J.,* Attorney or Agent: George B. Finnegan Jr., et al., Ex. Gp.: 113

4,047,545, Re. S.N. 935,207, Filed Aug. 21, 1978, Cl. 140/123.6, INSTALLATION TOOL, Joseph R. Paradis, Owner of Record: *Dennison Manufacturing Company, Framingham, Mass.,* Attorney or Agent: George E. Kersey, Ex. Gp.: 321

4,049,753, Re. S.N. 935,202, Filed Aug. 21, 1978, Cl. 260/880 B, COUPLING OF ALKALI METAL-TERMINATED POLYMERS, George A. Moczygemba, Owner of Record: *Phillips Petroleum Company, Bartlesville, Okla.,* Attorney or Agent: Donald J. Quigg, et al., Ex. Gp.: 142

4,068,879, Re. S.N. 935,513, Filed Aug. 21, 1978, Cl. 294/89, CONCRETE SLAB HOISTING APPARATUS, Philip A. Torbet, et al., Owner of Record: *The Burke Company, San Mateo, Calif.,* Attorney or Agent: Frank A. Neal, Ex. Gp.: 313

4,071,577, Re. S.N. 935,447, Filed Aug. 21, 1978, Cl. 260/827, TOUGHENED MERCAPTOSILOXANE MODIFIED EMULSION POLYMERIZED VINYLIC POLYMERS, James R. Falender, et al., Owner of Record: *Dow Corning Corporation, Midland, Mich.,* Attorney or Agent: Robert F. Fleming, Jr., et al., Ex. Gp.: 142

4,077,796, Re. S.N. 923,820, Filed Jul. 12, 1978, Cl. 71/78, TOBACCO SUCKER CONTROL AGENT AND METHOD, Calman J. Kish, Owner of Record: *Fairmount Chemical Company, Inc., Newark, N.J.,* Attorney or Agent: Morris Relson, et al., Ex. Gp.: 124

4,081,094, Re. S.N. 931,504, Filed Aug. 7, 1978, Cl. 214/355, CONVEYOR-TRAILER FOR TRANSPORTING AN AGRICULTURAL COMMODITY, Ernest G. Pereira, et al., Owner of Record: *Cotton Machinery Company, Inc., Livermore, Calif.,* Attorney or Agent: Jack M. Wiseman, Ex. Gp.: 314

4,092,573, Re. S.N. 934,101, Filed Aug. 15, 1978, Cl. 318/221, MOTOR STARTING AND PROTECTING APPARATUS, John R. D'Entremont, Owner of Record: *Texas Instruments Incorporated, Dallas, Tex.,* Attorney or Agent: John A. Haug, et al., Ex. Gp.: 217

PATENT NOTICES

Certificates of Correction for the Week of Oct. 10, 1978

Re. 28,064	4,066,633	4,081,593	4,087,431
Re. 29,632	4,066,757	4,081,607	4,087,445
3,219,623	4,067,617	4,081,826	4,087,453
3,666,770	4,067,789	4,082,491	4,087,511
3,745,025	4,067,896	4,082,758	4,087,536
3,801,071	4,067,973	4,082,987	4,087,556
3,801,786	4,069,505	4,083,115	4,087,557
3,879,841	4,069,614	4,083,228	4,087,565
3,935,867	4,070,585	4,083,488	4,087,599
3,937,631	4,070,836	4,084,189	4,087,605
3,963,484	4,072,568	4,084,395	4,087,627
3,963,572	4,072,574	4,085,086	4,087,753
3,981,265	4,072,654	4,085,090	4,087,838
3,992,172	4,072,738	4,085,094	4,088,083
3,998,589	4,073,372	4,085,127	4,088,541
4,000,720	4,074,049	4,085,199	4,088,596
4,001,300	4,074,313	4,085,230	4,088,953
4,016,419	4,074,448	4,085,278	4,089,108
4,024,679	4,075,205	4,085,279	4,089,528
4,026,742	4,075,726	4,085,281	4,089,642
4,035,590	4,077,000	4,085,373	4,089,686
4,036,578	4,077,560	4,085,403	4,089,749
4,037,190	4,077,671	4,085,619	4,089,770
4,039,895	4,077,898	4,086,159	4,090,139
4,040,635	4,078,062	4,086,233	4,090,153
4,041,653	4,078,084	4,086,320	4,090,516
4,060,702	4,078,163	4,086,328	4,090,840
4,062,995	4,078,480	4,086,344	4,091,201
4,064,706	4,079,130	4,086,650	4,091,238
4,064,883	4,079,355	4,086,834	4,091,273
4,065,551	4,080,491	4,086,895	4,091,617
4,066,217	4,080,497	4,086,953	4,092,190
4,066,514	4,081,301	4,087,278	4,106,679

Errata

All reference to Patent No. 4,107,853 to Peter Henry Cook and Joseph Arthur Henry Holmes of England for EDUCATIONAL TOYS appearing in the OFFICIAL GAZETTE of August 22, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,111,286 to William John Williams of Michigan for BRAKE ASSEMBLY appearing in the OFFICIAL GAZETTE of September 5, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,111,508 to Richard G. Haworth, Charles J. Saylor and Harold R. Wilson of Michigan for WALL PANEL WITH PREWIRED POWER SYSTEM appearing in the OFFICIAL GAZETTE of September 5, 1978 should be deleted since no patent was granted.

All reference to Patent No. 4,112,719 to Reginald R. Gallant of Connecticut for SECURITY LOCK appearing in the OFFICIAL GAZETTE of September 12, 1978 should be deleted since no patent was granted.

Patents Available for Licensing or Sale

4,025,699. MANGANESE STORAGE BATTERY. Lou Silva, 118½ Bell St., B, Reno, Nevada, 89503.

4,040,657. VARIABLE-DENSITY VEHICLE GLARE SHIELD. Joyce P. Penzes, Route 116, Purdys, N.Y. 10578.

4,046,400. BALL SKI BINDING. Felix A. Viletto, 116 Ford City Road, Freeport, Pa. 16229.

4,056,897. PLANTER DESIGN AND CONSTRUCTION. Communicate with E. Barron Batchelder, Sixbey, Friedman & Leedom, P.C., Suite 206, 2001 Jefferson Davis Highway, Arlington, Va. 22202.

4,099,286. CLEANERS FOR CHALK ERASERS. Soji Ishikawa. Correspond with: Bernhard Kreten, Blair, Brown, & Kreten, 4637 Eastern Ave. NE., Washington, D.C. 20018.

The General Electric Company is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for licenses may be addressed to the General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind. 46804.

3,942,055. HERMETIC MOTOR STATOR.

3,967,172. CONTROL CIRCUIT, REFRIGERATION SYSTEM, AND METHOD OF CONTROLLING SPEED OF AN ALTERNATING CURRENT MOTOR.

3,968,468. ELECTRICAL SWITCH AND METHOD OF CALIBRATING.

3,968,469. DETECTOR FOR RADIANT HEAT.

3,971,907. ELECTRICAL ASSEMBLY, ELECTRICAL CONTACT AND METHOD OF MOUNTING AN ELECTRICAL CONTACT.

3,979,708. THERMOSTAT AND ANTICIPATOR THEREFOR.

4,052,624. RAMP AND PEDESTAL CONTROL CIRCUIT.

4,070,144. CONTROL SYSTEM.

4,079,347. CONTROL DEVICE.

4,082,412. MALE AND FEMALE TERMINAL COMBINATION.

4,087,232. METHOD OF ACTUATING MEANS FOR DETECTING RADIANT HEAT AND SYSTEM.

4,093,899. CIRCUIT AND METHOD FOR CONTROLLING SPEED OF AN ALTERNATING CURRENT MOTOR.

Application for license may be addressed to the Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,562,066. DIE STRUCTURE FOR HOT STAMPING MACHINE.

3,882,797. EXPANSION GRATE FOR INCINERATOR.

3,891,086. COMPOSITE PACKAGE.

3,941,339. MOUNTING ARRANGEMENT FOR FAN MOTOR.

3,952,369. HINGE STRUCTURE.

3,964,272. AIR CONDITIONING MOUNTING SYSTEM FOR A MOBILE HOME.

4,067,256. FASTENER ANCHOR FORMED IN THERMOPLASTIC SHEET.

4,067,628. FOAM-INSULATED SIDE-BY-SIDE REFRIGERATOR.

4,070,728. VERTICAL ADJUSTABLE DOOR HINGE ASSEMBLY.

4,072,374. SIDE FASTENER CLIP FOR A PLATE-LIKE MEMBER.

4,074,987. DEFROST SENSING SYSTEM FOR FREEZER COMPARTMENT.

4,075,864. AIR CONDITIONING FAN CONTROL.

4,081,997. CLOTHES DRYER AIR BLOW TEST DEVICE AND METHOD.

4,086,053. CLOTHES DRYER GAS HEATER.

4,087,987. DEFROST PRESSURE CONTROL SYSTEM.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE ARMY

Office of Judge Advocate General, Patent Division-Room 2C–455, Pentagon, Washington, D.C. 20310

Patent 3,941,999. Automatic Focus Pulse Gated System. Filed Apr. 1, 1975. Patented Mar. 2, 1976.

Patent 3,944,950. Quasi-Optical Integrated Circuits. Filed Sept. 30, 1974. Patented Mar. 16, 1976.

Patent 3,949,246. Piezoelectric Bimorph Controlled Variable Capacitor. Filed Dec. 23, 1974. Patented Apr. 6, 1976.

Patent 3,952,378. Mechanical Closure Device. Filed Feb. 4, 1975. Patented Apr. 27, 1976.

Patent 3,952,576. Laminar Jet Fluid Property Sensor. Filed Apr. 10, 1975. Patented Apr. 27, 1976.

Patent 3,953,129. Testing and Inspecting Lens by Holograph Means. Filed Jan. 9, 1975. Patented Apr. 27, 1976.

Patent 3,953,850. Radar Test Facility Communication System. Filed Oct. 8, 1974. Patented Apr. 27, 1976.

Patent 3,958,121. Infrared Image Storage Plate. Filed Sept. 10, 1975. Patented May 18, 1976.

Patent 3,958,602. Flueric Laminar Digital Amplifier. Filed Mar. 12, 1975. Patented May 25, 1976.

Patent 3,960,022. Null Adjustable Vortex Rate Sensor. Filed May 9, 1973. Patented June 1, 1976.

Patent 3,962,591. Voltage Doubler Circuit. Filed Dec. 23, 1974. Patented June 8, 1976.

Patent 3,962,657. Broadband Data Modulation System. Filed Oct. 22, 1974. Patented June 8, 1976.

Patent 3,967,218. Edge-Guided Wave Directional Combiner. Filed Sept. 26, 1975. Patented June 29, 1976.

DEPARTMENT OF THE AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent 3,970,007. Salvage Switch. Filed Jan. 20, 1971. Patented July 20, 1976.

Patent 3,975,210. Metal-Gas Battery With Axial Reactant Gas Storage Cavity. Filed Mar. 27, 1975. Patented Aug. 17, 1976.

Patent 3,975,416. Preparation of Yttrium and Lanthanide Hexafluoroisopropoxide Diammoniates. Filed Sept. 6, 1973. Patented Aug. 17, 1976.

Patent 3,975,444. Ethynyl-Substituted Aromatic Ortho Diamines and Method of Synthesis. Filed May 19, 1975. Patented Aug. 17, 1976.

Patent 3,975,748. Multispectral Laser Camera Device. Filed May 22, 1970. Patented Aug. 17, 1976.

Patent 3,975,955. Edgetone Suppression Device for Wind Tunnel Walls. Filed June 27, 1975. Patented Aug. 24, 1976.

Patent 3,975,981. Separation Spring Actuator. Filed May 12, 1975. Patented Aug. 24, 1976.

Patent 3,976,268. Tethered Balloon Mooring Means. Filed Apr. 8, 1975. Patented Aug. 24, 1976.

Patent 3,976,394. Interstage Bleed Assembly. Filed July 18, 1975. Patented Aug. 24, 1976.

Patent 3,976,521. Method of Coating Boron Particles With Ammonium Perchlorate. Filed Nov. 20, 1974. Patented Aug. 24, 1976.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20545

Patent 3,910,714. Liquid Metal Pump for Nuclear Reactors. Filed Dec. 11, 1974. Patented Oct. 7, 1975.

Patent 3,912,582. Hydraulic Balancing of a Control Component Within a Nuclear Reactor. Filed Aug. 16, 1974. Patented Oct. 14, 1975.

Patent 3,912,584. LMFBR With Booster Pump in Pumping Loop. Filed Jan. 9, 1974. Patented Oct. 14, 1975.

Patent 3,912,908. Electric Cartridge-Type Heater for Producing a Given Non-Uniform Axial Power Distribution. Filed Nov. 12, 1974. Patented Oct. 14, 1975.

Patent 3,914,371. Method for Preparing Boron-Carbide Articles. Filed Dec. 27, 1973. Patented Oct. 21, 1975.

Patent 3,914,612. Neutron Source. Filed Aug. 26, 1974. Patented Oct. 21, 1975.

Patent 3,915,499. Acid Pre-Treatment Method for In Situ Ore Leaching. Filed July 23, 1974. Patented Oct. 28, 1975.

Patent 3,917,509. Thermionic Nuclear Reactor With Internal Heat Distribution and Multiple Duct Cooling. Filed Apr. 16, 1974. Patented Nov. 4, 1975.

Patent 3,919,406. Thermochemical Production of Hydrogen. Filed July 10, 1974. Patented Nov. 11, 1975.

Patent 3,919,580. Relativistic Electron Beam Generator. Filed Sept. 11, 1974. Patented Nov. 11, 1975.

Patent 3,923,496. Nickel Powder and a Process for Producing It. Filed Apr. 26, 1945. Patented Dec. 2, 1975.

Patent 3,923,612. Electroplating a Gold-Platinum Alloy and Electrolyte Therefor. Filed Feb. 25, 1974. Patented Dec. 2, 1975.

Patent 3,924,106. Background Compensation for a Radiation Level Monitor. Filed Oct. 31, 1974. Patented Dec. 2, 1975.

Patent 3,925,536. Method of Recovering Uranium Hexafluoride. Filed June 19, 1974. Patented Dec. 9, 1975.

Patent 3,926,344. Volumetric Dispenser for Small Particles From Plural Sources. Filed June 20, 1974. Patented Dec. 16, 1975.

Patent 3,927,192. Chemical Cycle for Thermochemical Production of Hydrogen From Water. Filed Jan. 29, 1975. Patented Dec. 16, 1975.

Patent 3,927,325. Tissue Irradiator. Filed July 10, 1974. Patented Dec. 16, 1975.

Patent 3,928,126. Fuel or Irradiation Subassembly. Filed July 9, 1974. Patented Dec. 23, 1975.

Patent 3,928,549. Thermochemical Production of Hydrogen. Filed June 20, 1974. Patented Dec. 23, 1975.

Patent 3,928,700. Method of Producing Thin Cellulose Nitrate Film. Filed May 30, 1974. Patented Dec. 23, 1975.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Chief, Patent Branch Westwood Building, Bethesda, Md. 20014

Patent 3,976,072. Blink-Operated Extracorporeal Tear Duct. Filed Sept. 3, 1975. Patented Aug. 24, 1976.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research—Code 302, Arlington, Md. 22217

Patent 3,549,591. Polyfluoroepoxides and Epoxy Resins Containing Fluorine on the Aromatic Carbon Structure and Process. Filed July 30, 1968. Patented Dec. 22, 1970.

Patent 3,898,662. Radar Target Simulator Using No Electrical Connection to Radar. Filed Aug. 16, 1968. Patented Aug. 5, 1975.

Patent 3,936,954. Electronic Bearing Selector for Omni-Directional Signals. Filed May 27, 1964. Patented Feb. 10, 1976.

Patent 3,936,958. Sonar Reverberation Simulation. Filed June 18, 1968. Patented Feb. 10, 1976.

Patent 3,964,155. Method of Planar Mounting of Silicon Solar Cells. Filed June 8, 1973. Patented June 22, 1976.

Patent 3,965,343. Modular System for Performing the Discrete Fourier Transform Via the Chirp-Z Transform. Filed Mar. 3, 1975. Patented June 22, 1976.

Patent 3,965,729. Load Crack Testing Device. Filed Oct. 1, 1975. Patented June 29, 1976.

Patent 3,967,633. Gas Vent System for Operation in Any Arbitrary Spatial Orientation. Filed May 22, 1975. Patented July 6, 1976.

Patent 3,968,491. Radar Rangemeter. Filed Nov. 25, 1974. Patented July 6, 1976.

Patent 3,971,110. Method for Fabricating an Electron-Emission Cathode. Filed Sept. 11, 1975. Patented July 27, 1976.

Patent 3,971,927. Modular Discrete Cosine Transform System. Filed Nov. 3, 1975. Patented July 27, 1976.

Patent 3,972,554. Ring Type Recovery Tool. Filed Jan. 12, 1976. Patented Aug. 3, 1976.

Patent 3,972,555. Tong Type Recovery Tool. Filed Jan. 2, 1976. Patented Aug. 3, 1976.

Patent 3,972,730. Pyrotechnically Activated Lithium-Chlorine Cell. Filed June 25, 1976. Patented Aug. 3, 1976.

Patent 3,972,814. Fluidic Oil-Water Separator. Filed Feb. 12, 1975. Patented Aug. 3, 1976.

Patent 3,973,501. Fuze With Dual Safe Positions and Armed-Safe Indicator. Filed Sept. 17, 1974. Patented Aug. 10, 1976.

Patent 3,978,487. Coupled Fed Electric Microstrip Dipole Antenna. Filed Apr. 24, 1975. Patented Aug. 31, 1976.

Patent 3,979,746. High Speed Manchester Code Demodulator. Filed Apr. 29, 1975. Patented Sept. 7, 1976.

TENNESSEE VALLEY AUTHORITY

Division of Law, Muscle Shoals, Ala. 35660

Patent 3,969,483. Removal of Carbonaceous Matter From Ammonium Polyphosphate Liquids. Filed June 5, 1975. Patented July 13, 1976.

U.S. DEPARTMENT OF THE ARMY

Office of Judge Advocate General, Patent Div., RM 2C–455 Pentagon, Washington, D.C. 20314

Patent 4,037,821. Telescoping Retractor. Filed Aug. 10, 1976. Patented July 26, 1977. Not available NTIS.

Patent 4,038,660. Microwave Absorbers. Filed Aug. 5, 1975. Patented July 26, 1977. Not available NTIS.

Patent 4,042,938. Analog and Digital Data Recorder. Filed Jan. 8, 1976. Patented Aug. 16, 1977. Not available NTIS.

Patent 4,046,976. Pressure Actuated Sensor Switch With Bobbin, Trip Cord and Breakwire. Filed Jan. 16, 1976. Patented Sept. 6, 1977. Not available NTIS.

Patent 4,049,131. Freight Container Unloading System. Filed July 11, 1975. Patented Sept. 20, 1977. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Branch, General Service Division, Federal Building, Agricultural Research Service Hyattsville, Md. 20782

Patent application 725,225. Improved Emulsion Systems for Imparting Durable Press Properties to Cotton and Cotton-Polyester Blended Textiles. Filed Sept. 22, 1976.

Patent application 725,226. Hydrophobic Quaternary Ammonuim Cottons Prepared in Non-Aqueous Media. Filed Sept. 22, 1976.

Patent application 766,156. Dyebath Application of Direct, Acid, and Base Dyestuffs and Combinations Thereof to Cotton Textiles. Filed Feb. 2, 1977.

Patent application 768,806. New Antimicrobial Esters of Aliphatic Diols. Filed Feb. 15, 1977.

Patent application 787,177. Antibacterial Textile Finishes Utilizing Zirconyl Acetate Complexes of Inorganic Peroxides. Filed Apr. 12, 1977.

Patent application 794,594. Improved Emulsion Systems for Imparting Durable Flame Retardancy to Cotton-Polyester Blended Textiles. Filed May 6, 1977.

Patent application 794,595. Process for Imparting Wrinkle Recovery to Cotton Fabrics With Vapors From Glycidol. Filed May 6, 1977.

Patent application 809,356. High Performance Durable-Press Cotton Fabrics. Filed June 23, 1977.

Patent application 833,882. Sulfur-Containing Antimicrobial Ester Amides. Filed Sept. 16, 1977.

Patent application 837,490. A Process for Producing a Powdered Flavoring Material. Filed Sept. 28, 1977.

Patent application 846,478. Apparatus for Conditioning Seed Cotton. Filed Oct. 28, 1977.

Patent application 866,078. Improved Formulations for Imparting Flame Retardance to Cellulosic Fabrics Via Transfer Techniques. Filed Dec. 30, 1977.

Patent application 879,999. Purification of Sucrose Esters of Fatty Acids by a Method of Ultrafiltration. Filed Feb. 22, 1978.

Patent application 900,373. A Substituted Benzodioxan Sweetening Compound. Filed Apr. 26, 1978.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20545

Patent application 734,839. Solar Energy Collector. Filed Oct. 22, 1976.

Patent 4,029,519. Solar Collector Having a Solid Transmission Medium. Filed Mar. 19, 1976. Patented June 14, 1977. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

National Institutes of Health, Chief, Patent Branch Westwood Building, Bethesda, Md. 20014

Patent 4,070,621. Antenna With Electro-Optical Modulator. Filed July 23, 1976. Patented Jan. 24, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent 4,077,678. Energy Storage Apparatus. Filed July 30, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,077,788. Atomic Hydrogen Storage Method and Apparatus. Filed Apr. 13, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,077,818. Process for Utilizing Low-Cost Graphite Substrates for Polycrystalline Solar Cells. Filed June 4, 1976. Patented Mar. 7, 1978. Not available NTIS.

Patent 4,079,268. Thin Conformal Antenna Array for Microwave Power Conversions. Filed Oct. 6, 1976. Patented Mar. 14, 1978. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 26, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-4-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-1-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-77
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-25-77
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	9-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-3-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-30-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-22-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	11-29-76
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-18-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-6-77
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-13-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GRAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-15-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-24-77

Expiration of patents: The patents within the range of numbers indicated below expire during August 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,994,087 to 2,998,605, inclusive
Plant Patents..... Numbers 2,085 to 2,094, inclusive

REISSUES

OCTOBER 10, 1978

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 29,795

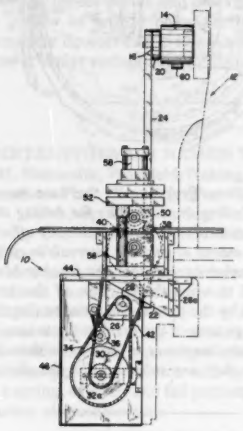
SELF-CONTAINED FEED ROLL FOR POWER PUNCH PRESSES

Harry Eyberger, Pittsburgh, Pa., assignor to Vamco Machine and Tool, Inc., Pittsburgh, Pa.

Original No. 3,483,782, dated Dec. 16, 1969, Ser. No. 651,295, Jul. 5, 1967. Application for reissue Dec. 16, 1977, Ser. No. 861,190

Int. Cl.² B26D 5/20

U.S. Cl. 83—245 9 Claims



1. A self-contained feed roll unit for a power punch press having a crankshaft rotating in timed relation to the pressing portion of the operating cycle of said punch press, said feed roll unit comprising:

(a) a power driven feed roll;

(b) an idler feed roll rotatably supported on a movable frame and normally urged toward said power driven feed roll, said idler feed roll being periodically moved away from said power driven feed roll by feed roll release means to free stock being fed to said power pass during the pressing portion of said power press operating cycle;

(c) an index drive having an input shaft to receive continuous, uniform rotary motion and an output shaft transmitting non-continuous, incremental rotary motion;

(d) first positive drive means drivingly connecting said index drive input shaft to said power press crankshaft; and

(e) second positive drive means [drivingly connecting] *including a first drive member connected to said index drive output shaft, a driven member connected to said power driven feed roll, an idler member drivingly connected to said first drive member and said driven member to thereby drivingly connect* said index drive output shaft to said power driven feed roll, said second positive drive means being adjustable to vary the ratio of the angular velocity of said index drive output shaft relative to said power driven feed roll.

Re. 29,796

AUTOMATIC CREDIT LOAN MACHINE

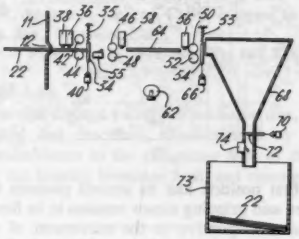
Mititaka Yamamoto; Yukio Mizuta; Toshio Tanaka, and Takeo Asada, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Original No. 3,443,675, dated May 13, 1969, Ser. No. 649,666, Jun. 28, 1967. Application for reissue May 10, 1971, Ser. No. 141,856

Claims priority, application Japan, Jul. 1, 1966, 41-42799

Int. Cl.² G07F 7/08

U.S. Cl. 194—4 C 12 Claims



1. An automatic credit loan machine operable in response to credit cards introduced thereinto, each said card having its own identification number and at least one element by which to recognize its genuineness, comprising in combination: detection means for detecting said element on a credit card introduced into said machine to test its genuineness; card reading means coupled with said detection means and operable in response to said detection means for reading said identification number of said card; validity testing means for testing the validity of said identification number that has been read; recording means; means for controlling said recording means to record said identification number only when said number is valid; card storage means for storing genuine cards introduced into said machine; card conveyor means for moving cards from said detection means to said reading means and then to said storage means; cash storage means for storing cash; and control means coupled with said cash storage means and with said validity testing means for dispensing a loan of cash when said identification number is valid.

Re. 29,797

MATERIAL HANDLING APPARATUS HAVING GRIPPING MEANS FOR MOVING ARTICLES IN SEVERAL DIRECTIONS

George Mink, 13130 Geoffrey, Warren, Mich. 48092

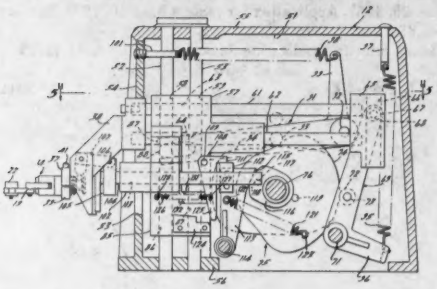
Original No. 4,002,245, dated Jan. 11, 1977, Ser. No. 583,099, Jun. 2, 1975. Continuation-in-part of Ser. No. 506,113, Sep. 16, 1974, Pat. No. 3,972,422. Application for reissue Oct. 3, 1977, Ser. No. 839,128

Int. Cl.² B65G 47/08

U.S. Cl. 214—1 BD 8 Claims

20. A material handling apparatus for moving workpieces or the like between a first location and a second location, gripping means, supporting means supporting said gripping means for movement between a gripping position in which a workpiece is gripped and a released position, said supporting means being movable to position said gripping means in said first location and in said second location, first motion transfer means for moving said supporting means in a first direction between a first extreme position and a second extreme position, second motion transfer means for moving said supporting means in a

second direction between a first extreme position and a second extreme position, said second direction being angularly related to said first direction, single drive means including an element movable between a first position and a second position, timing means for operating said motion transfer means so that said supporting means is moved in sequence by said motion transfer means from its first location to its second location, said timing means including a lost motion connection operably connecting said drive means element to at least one of said motion transfer means, said lost motion connection being effective to permit movement of said drive means element from a position intermediate its first position and its second position to its first position when said gripping means remains in its first location, actuating means responsive to the movement of said drive means element from its intermediate position to its first position relative to said gripping means for moving said gripping means from one of its positions to the other of its positions, locking means for retaining said gripping means in its other position upon movement of said gripping means from its first location to its second location, and means responsive to the movement of said gripping means to its second location for releasing said locking means and permitting said actuating means to move said gripping means from its other position to its one position.



Re. 29,798

IMPACT CRUSHER

Louis W. Johnson, Eugene, Oreg., assignor to El-Jay, Inc., Eugene, Oreg.

Original No. 3,873,047, dated Mar. 25, 1975, Ser. No. 343,635, Mar. 22, 1973. Application for reissue Mar. 16, 1977, Ser. No. 778,053

Int. Cl.[2] **B02C** *13/09*

U.S. Cl. 241—275 **16 Claims**

1. In an impact crusher:

base means,

a rotary impeller mounted on the base means for rotation on a vertical axis,

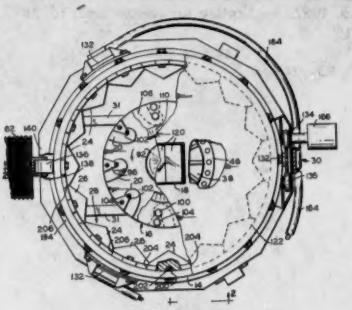
drive means for rotating the impeller to centrifugally throw material to be crushed through a predetermined annular zone around the impeller,

annular breaker bar means,

mounting means mounting the breaker bar means [adjustably] *movably* on the base means in positions surrounding said annular zone,

said breaker bar means presenting flat impact surfaces parallel to the vertical axis and normal to the path of thrown material to achieve maximum impact,

and [adjustment] *drive* means for moving the breaker bar means *during rotation of the impeller and as the breaker bar means is being worn* [relative to the base means], *said drive means including motor means for driving the breaker bar means, and control means automatically effecting reversal of the motor means at periodic intervals to cause reciprocation of the breaker bars so that the breaker bars are progressively moved* to vary the portion of the breaker bar means impacted by the thrown material to distribute wear *evenly* over a large area of the breaker bar means *so that the breaker bar means continues to present to thrown material impact surfaces that are substantially flat for maximum impact efficiency.*



Re. 29,799

TRIAMCINOLONE ACETONIDE DERIVATIVE

Agustin Agusti, Barcelona, Spain, assignor to J. Uriach & Cia S.A., Barcelona, Spain

Original No. 3,899,581, dated Aug. 12, 1975, Ser. No. 511,075, Oct. 1, 1974. Division of Ser. No. 452,322, Mar. 18, 1974, Pat. No. 4,107,161. Application for reissue Aug. 8, 1977, Ser. No. 822,695

Int. Cl.[2] **C07J** *5/00;* **A61K** *31/58*

U.S. Cl. 424—241 **6 Claims**

1. A pharmaceutical preparation comprising as active ingredients [triamcinolone acetonide] *bis(triamcinolone acetonide)*4,4'-methylene-bis(3-methoxy-2-naphthoate); and a pharmaceutically acceptable carrier.

PLANT PATENTS

GRANTED OCTOBER 10, 1978

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,311
CHRYSANTHEMUM PLANT NAMED AMBER CONCORD

Kerry S. Petusky, West Chicago, Ill., assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 9, 1977, Ser. No. 795,309
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant, substantially as herein shown and described, characterized by the light yellow to bronze color variation of its relatively small, composite flowers due to its susceptibility to changes of blossom color under variations of light and temperature conditions.

4,312
CHRYSANTHEMUM NAMED WOLVERINE

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 16, 1977, Ser. No. 797,491
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. The new and distinct chrysanthemum cultivar substantially as herein shown and described, characterized by the burnt orange and yellow coloring of its medium sized blooms which appear singly on strong stems in an open spray formation, by its uniform 7-week photoperiodic flowering response for greenhouse pot plant culture, and by its excellent performance as a spring, summer and fall potted plant and as a natural season garden chrysanthemum.

4,313
CHRYSANTHEMUM NAMED WILDCAT

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed May 16, 1977, Ser. No. 797,492
Int. Cl.[2] A01H *5/00*

U.S. Cl. Plt.—80 **1 Claim**

1. The new and distinctive chrysanthemum cultivar substantially as herein shown and described, characterized by its medium pink blooms of medium size and decorative flower form, its uniform 7-week photoperiodic flowering response and good performance when grown as a spring, summer and fall potted plant, its good performance when grown as a natural season garden chrysanthemum, and its relatively vigorous upright growth habit with good stem strength and abundant, medium sized foliage.

4,314
NECTARINE TREE (48-G-140)

Frederic W. Anderson, Merced, Calif., assignor to The Burchell Nursery, Inc., Modesto, Calif.

Filed Jan. 6, 1978, Ser. No. 867,372
Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree, substantially as illustrated and described, characterized by fruit having general resemblance to the clingstone fruit of the Le Grand nectarine, but bearing freestone fruit, and ripening a few days later.

4,315
PEAR TREE

David B. Lowry, Talent, Oreg., assignor to Highcroft Orchards, Talent, Oreg.

Filed Jan. 16, 1978, Ser. No. 869,942
Int. Cl.[2] A01H *5/03*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree, substantially as illustrated and described, which is large, vigorous, upright, tall, vase-formed, rapid growing, hardy, foliated with large, obovate, abruptly pointed leaves having a crenate, coarsely serrate margin and a medium length petiole, blooms with pink-white, fertile flowers, and a regular and very productive bearer of large to medium size, uniform, obovate, symmetrical fruit —of excellent dessert quality—having a thick, smooth, waxen, glossy skin; the skin having a yellow ground color substantially overspread, in maturity of ripening, with a Burgundy red, and the flesh being distinctly white; and the fruit, in comparison to the Bartlett, being shorter and pyriform with a slightly flattened base, the red of the skin being more uniform about the fruit, and the distinctly white flesh being subacid whereas the flesh of the Bartlett is yellowish-white and sweet.

PATENTS

GRANTED OCT. 10, 1978

ERRATA

For CLASS	See PATENT NO.
043–004	4,118,807
073–766	4,118,933
405–030	4,118,937
405–145	4,118,938
405–174	4,118,940
405–204	4,118,941
405–204	4,118,942
366–189	4,119,304
308–009	4,119,375
312–198	4,119,376
312–344	4,119,377
316–019	4,119,378
073–800	4,119,380
422–298	4,119,400
422–056	4,119,405
422–081	4,119,406
422–058	4,119,407
422–169	4,119,408
075–005 R	4,119,453
075–012	4,119,454
075–025	4,119,455
075–122	4,119,456
075–134 N	4,119,457
075–170	4,119,458
075–243	4,119,459
096–001 PC	4,119,460
096–001.8	4,119,461
096–066.3	4,119,462
096–067	4,119,463
096–068	4,119,464
096–075	4,119,465
096–115 R	4,119,466
106–100	4,119,467
106–038.22	4,119,468
106–040 R	4,119,469
106–045	4,119,470
106–047 Q	4,119,471
106–057	4,119,472
106–058	4,119,473
106–065	4,119,474
106–073.5	4,119,475
106–087	4,119,476
106–099	4,119,477
106–288 Q	4,119,478
560–198	4,119,553
526–270	4,119,579

ERRATA—Continued

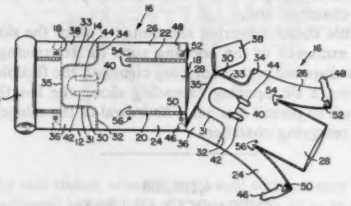
521–028 4,119,580
521–027 4,119,581
521–112 4,119,582
521–103 4,119,583
521–127 4,119,584
521–128 4,119,585
521–137 4,119,586
528–188 4,119,608
528–099 4,119,609
526–292 4,119,610
528–139 4,119,611
528–232 4,119,612
526–064 4,119,613
528–283 4,119,614
528–343 4,119,615
526–031 4,119,616
528–360 4,119,617
542–441 4,119,776
340–407 4,119,811
354–044 4,119,998
362–333 4,120,018
365–002 4,120,042

PATENTS

GRANTED OCTOBER 10, 1978

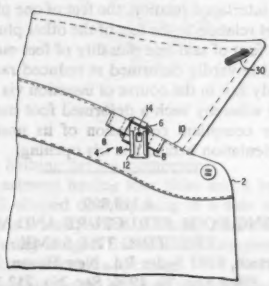
GENERAL AND MECHANICAL

4,118,802
DISPOSABLE HOODED GARMENT
Morton A. Polster, 221 Charing Rd., Rochester, N.Y. 14617
Filed May 2, 1977, Ser. No. 792,996
Int. Cl.[2] A41D *9/00*
U.S. Cl. 2—84 **18 Claims**



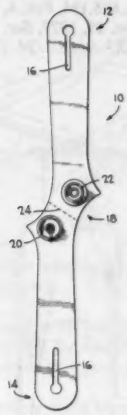
1. A garment-forming blank comprising a shell of two layers of fabric sealed along two opposite outside edges, said layers also being sealed along at least one side of a scored and rendable line which intersects both said sealed outside edges and includes (a) two oppositely disposed shoulder segments, each extending inwardly from a respective one of said sealed outside edges, and (b) two head segments extending, respectively, from the inner ends of said shoulder segments and generally transverse thereto in a direction away from the sealed side of said scored line, said head segments joining in a crown so that the scored and sealed line forms a head-receiving hood portion and a lower portion for receiving and covering another part of the body of a wearer, and further comprising one other rendable line scored in only a first one of said layers and separable to form a face-opening in said hood portion.

4,118,803
COLLAR STAY SYSTEM
Harry Blau, 1431 Ocean Ave., Apt. 1412, Santa Monica, Calif. 90401
Filed Sep. 12, 1977, Ser. No. 832,113
Int. Cl.[2] A41B *3/08*
U.S. Cl. 2—132 **5 Claims**



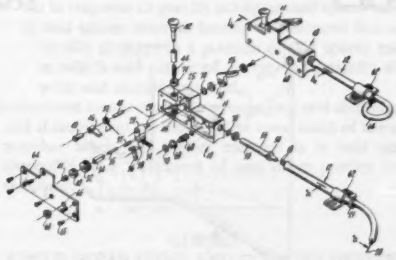
1. An improved collar stay system comprising:
a collar stay which engages with a tip of a collar of a shirt at one end of said collar stay; and
a hinge member formed of a rotatable ring coupled to said shirt and an elongated receiving member rotatably coupled to said ring, said receiving member having side edges configured to slidably engage and frictionally hold the other end of said collar stay.

4,118,804
SUSPENDER ENDS
Courtland F. H. Freese, Pittsfield, N.H., assignor to Globe Manufacturing Company, Pittsfield, N.H.
Filed May 16, 1977, Ser. No. 796,892
Int. Cl.[2] A41F *3/02*
U.S. Cl. 2—340 **6 Claims**



1. A suspender end adapted for use in a suspender set comprising an elongated strip of flexible material having a middle portion and two end portions, each end portion of the strip including a fastening means, and a releasable fastening means of two members affixed to the middle portion of the strip, the two members of the releasable fastening means being spaced from one another such that when the strip is folded on a bias over on itself, the two members of the releasable fastening means are able to engage each other and securely lock.

4,118,805
ARTIFICIAL SPHINCTER
Harry G. Reimels, Braintree, Mass., assignor to Codman & Shurtleff, Inc., Randolph, Mass.
Filed Feb. 28, 1977, Ser. No. 773,085
Int. Cl.[2] A61F *1/00*; A61B *17/00*
U.S. Cl. 3—1 **9 Claims**



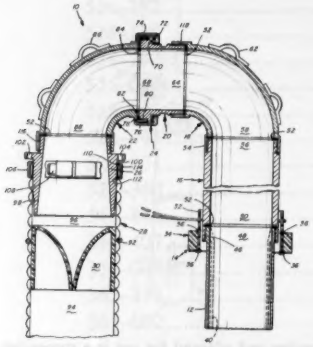
1. In a non-inflatable artificial mechanical sphincter of the type for implantation within a human body, said sphincter having means for occluding a duct; adjustable spring means associated with said occlusion means for increasing an occlusive force around said duct; means associated with said spring means to mechanically control said increase of occlusive force;

and means responsive to an urging movement for releasing occlusion of said duct, wherein the improvement comprises: means for preventing increase of said spring means beyond a predetermined tightening position to protect said duct from excessive or damaging occlusion.

4,118,806
PROSTHETIC BLOOD VESSEL

Victor L. Porier, Chelmsford, and William F. Bernhard, Framingham, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Continuation of Ser. No. 655,194, Feb. 4, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 854,951
Int. Cl.[2] A61F *1/24, 1/00*
U.S. Cl. 3—1.4 **8 Claims**

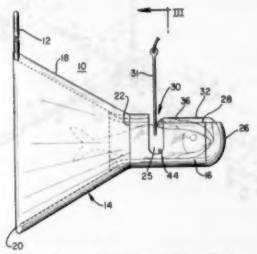


8. A blood conducting implantable prosthesis comprising:
a rigid tube having one end section for insertion through the heart wall to form an open passage into a heart ventricle, the other end of said rigid tube having means for attachment to a flexible prosthetic blood conduit enclosing a prosthetic heart valve between its ends, and means forming an extension of said other end of said rigid tube for insertion into such flexible prosthetic blood conduit approximately to said prosthetic heart valve to support said prosthetic blood conduit.

4,118,807
MINNOW DIPPER

Kenneth G. McCauley, 1162 Carbona Dr., Dallas, Tex. 75217

Filed Sep. 6, 1977, Ser. No. 830,407
Int. Cl.[2] A01K *97/04*
U.S. Cl. 43—4 **3 Claims**



1. A minnow dipper comprising, in combination:
a funnel portion characterized by a tapered sidewall section converging from a relatively large diameter open end to a relatively small diameter open end;
a handle attached to the funnel portion near the relatively large diameter open end;
a tubular member defining a minnow receiving chamber having an open end portion attached to the funnel portion substantially in concentric relation with the small diameter open end, a terminal end portion projecting axially with respect to the funnel portion, and an axially extending side opening formed in the tubular member intermediate the open and terminal end portions, the side opening defining a hooking zone which is sufficiently deep to permit hooking access to a minnow disposed in the receiving chamber; and,
a flexible sheath covering substantially all of the side opening exclusive of the hooking zone for restraining a minnow disposed in the receiving chamber, the flexible sheath having a slit opening extending along the length of the sheath to permit manual withdrawal of the minnow from the receiving chamber.

4,118,808
INTRA-OCULAR LENS

Stanley Poler, 78 E. Second St., New York, N.Y. 10003

Division of Ser. No. 691,033, May 28, 1976, Pat. No. 4,073,014. This application Dec. 19, 1977, Ser. No. 862,027
Int. Cl.[2] A61F *1/16, 1/24*
U.S. Cl. 3—13 **7 Claims**

2. As an article of manufacture, a single-piece unitary plastic mounting adapter for iris-stabilized mounting of an intra-ocular lens element, comprising a circumferentially continuous ring body of peripheral contour generally conforming to and adapted to surround the peripheral contour of the lens element, plural axially spaced lens-retaining formations integral, with said ring body and extending directly inwardly from said body for axially limiting retaining engagement with both axial sides of the periphery of the lens element, and first and second pluralities of lens-positioning feet integral with said ring body and radially outwardly extending therefrom in angularly spaced and interlaced relation, the feet of one plurality being in axially offset relation to the feet of the other plurality, whereby at least one foot of said one plurality of feet may be resiliently stressed and inwardly deformed at reduced radial offset from the ring-body axis in the course of insertion via an iris opening, and further whereby such a deformed foot may thereafter be released for compliant restoration of its unstressed radially outward orientation behind the iris opening.

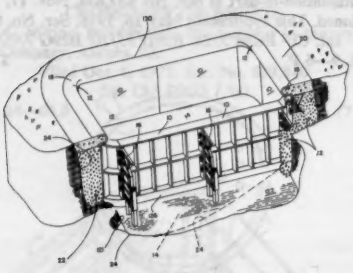
4,118,809
SWIMMING POOL STRUCTURE AND METHOD OF ERECTING THE SAME

Lyle E. Bertsch, 8207 Seller Rd., New Haven, Ind. 46774

Filed Aug. 10, 1976, Ser. No. 713,255
Int. Cl.[2] E04H *3/16, 3/18*
U.S. Cl. 4—172.19 **15 Claims**

1. A swimming pool comprising a plurality of wall sections, a plurality of braces, said wall sections having an upwardly facing surface, means for fastening said braces to said wall sections, each of said braces including at least two spaced-apart stake guides, one of said stake guides being adjacent to said wall sections, the other of said stake guides being remote therefrom, a plurality of stakes, one of said stakes being adapted to

be positioned in each of said stake guides, means for securing said stakes when positioned in said stake guides to said braces independently of each other, said wall sections being supported by said stakes, whereby said wall sections may be positioned, adjusted in both altitude and attitude so as to position said wall section surfaces in a common plane, and held in position.

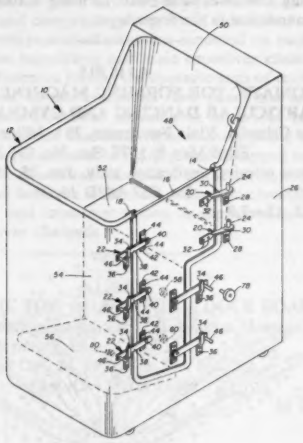


4,118,810

PORTABLE CHAIR TUB

Preston E. Brickhouse, 2800 Maywood Dr., San Bruno, Calif. 94066, and Clinton B. Dunlap, 8954 E. Marshall Pl., Tulsa, Okla. 74115

Filed Apr. 25, 1977, Ser. No. 790,458
Int. Cl.[2] A47K *3/00, 33/02, 3/22*
U.S. Cl. 4—173 R **6 Claims**



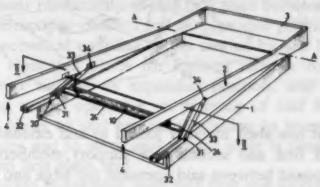
1. A portable bathing device, comprising:
a body compartment having four sides and a bottom, and having an L-shaped door opening in a side which door opening has a wider portion at its top than at its bottom,
a door removably hinged to the body compartment in a manner to close the door opening,
sealing means positionable between the door and the body compartment to form a water-tight seal when the door is closed,
an L-shaped seat formed in the body compartment against a rear wall of said body compartment and extending contiguously between two opposite sides,
the L-shaped door opening conforming substantially to the position of the seat,
means for introducing water into the body compartment, and
means for draining water from the body compartment.

4,118,811

DEVICE FOR INCLINING THE SUPPORTING SURFACE OF A RECLINING FURNITURE

Hugo Degen, Seltisberg, Switzerland, assignor to Inpaver AG, Zug, Switzerland

Filed Nov. 14, 1977, Ser. No. 851,286
Claims priority, application Switzerland, Nov. 23, 1976, 14715/76
Int. Cl.[2] A61G *7/10*
U.S. Cl. 5—62 **7 Claims**



1. A piece of furniture adapted to support a person in a reclining position comprising:
(a) a base;
(b) a support defining the inclination of a horizontally extending support surface for said person,
(1) said support having two portions spaced in a horizontal direction,
(2) one of said portions being superposed on said base for tilting movement about a first, horizontally extending axis transverse to said direction,
(3) the other portion moving toward and away from said base during said tilting movement;
(c) spacer means on said other portion for limiting movement of said other portion toward said base in a plurality of alternative positions, said spacer means including
(1) a hanger member secured to said other portion for pivotal movement about a second, horizontally extending axis, said hanger member having a free end portion downwardly spaced from said second axis in at least one of said alternative positions,
(2) a spacer member secured to said free end portion for angular movement about a third, horizontally extending axis,
(3) stop means keeping the center of gravity of said spacer member above said third axis and limiting said angular movement, and
(4) friction means interposed between said members for preventing said angular movement of said spacer member in response to gravity acting on said spacer member,
(i) said spacer member having an abutment face downwardly directed in a position of said spacer member in which said center of gravity is vertically aligned with said second axis; and
(d) abutment means on said base engaging said abutment face and thereby causing said angular movement of the spacer member when said spacer member is in said position thereof during movement of said other portion toward said base.

4,118,812

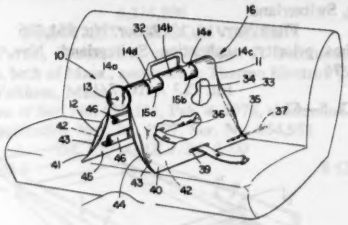
CHILD SEPARATING AND SUPPORT DEVICE

William H. Pangburn, 446 Stuart Dr., Brownsburg, Ind. 46112

Filed Nov. 7, 1977, Ser. No. 848,784
Int. Cl.[2] A47C *21/00*
U.S. Cl. 5—92 **20 Claims**

1. A child separating and support device for a seat of a vehicle which comprises:
a first side support member;

a second side support member rigidly joined to said first side support member along a common top edge, said first and second side support members each including a bottom edge and each diverging from said common top edge toward their corresponding bottom edge; and



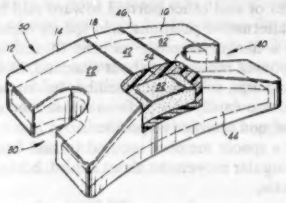
a least one shelf member joined to and extending between said first and second side support members and being disposed between said common top edge and said bottom edges.

4,118,813

SLEEP TRAINING PILLOW FOR THE PREVENTION OF SNORING

Nolen L. Armstrong, 3131 NW. Expressway, Oklahoma City, Okla. 73112

Filed Nov. 10, 1976, Ser. No. 740,419
Int. Cl.[2] A47G *9/00*
U.S. Cl. 5—337 6 Claims



1. A sleep training pillow for positioning a person's head along a predetermined incline with the face angled downwardly, the pillow characterized as having a pillow support surface and comprising:

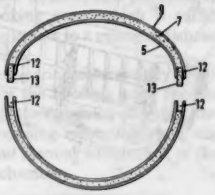
a first end member having a planar first face support surface, the first face support surface disposed to have a first angle of incline relative to the pillow support surface between 15° and 25°, and the first face support surface characterized as extending a sufficient distance to support the person's head positioned thereon such that the face of the person will be angled downwardly at approximately an angle corresponding to the value of the first angle of incline, and a second end member having a planar second face support surface, the second face support surface disposed to have a second angle of incline relative to the pillow support surface between 15° and 25°, and the second face support surface characterized as extending a sufficient distance to support the person's head positioned thereon such that the face of the person will be angled downwardly at approximately an angle corresponding to the value of the second angle of incline, the second angle of incline being reverse sloped relative to the first face support surface.

4,118,814

MANUFACTURE OF BOAT HULLS AND OTHER HOLLOW ARTICLES

Gerald Herbert Holtom, 5 Hillside St., Hythe, Kent, England

Continuation-in-part of Ser. No. 632,634, Nov. 17, 1975, abandoned. This application May 18, 1976, Ser. No. 687,450
Int. Cl.[2] B63B *5/24;* B29D *23/10;* B29G *7/02*
U.S. Cl. 9—6 P 12 Claims



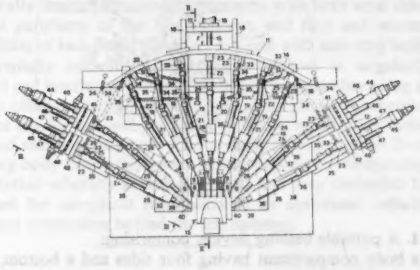
1. A method of constructing hollow articles comprising providing a male mould, coating the mould with a release agent, covering the release agent on the mould with at least a first layer of resin impregnated fibre, then with a winding of at least one layer of synthetic foam about the fibre, winding at least a further layer of fibre impregnated with resin about the foam with sufficient resin and under sufficient tension so that resin is forced into the joints between adjacent winds of foam to form a sandwich of foam between the layers of fibre and to form resin bridges connecting the first and further layers of fibre at the joints between adjacent winds of foam, removing the mould by cutting the sandwich into at least two parts, and rejoining the two parts with forming a tongue-and-groove interconnection in the foam layer.

4,118,815

AUTOMATIC TOE FORMING MACHINE FOR SHOES, IN PARTICULAR DANCING AND GYMNASTICS SHOES

Renato Crimella, Viale Famagosta, 28 - Milan, Italy

Filed May 9, 1977, Ser. No. 795,373
Claims priority, application Italy, Jun. 25, 1976, 24785A/76
Int. Cl.[2] A43D *15/00*
U.S. Cl. 12—7.9 11 Claims



1. An automatic toe forming machine for shoes, in particular dancing and gymnastics shoes, comprising, in combination, a last holding assembly, a first assembly of mechanical fingers movable between a non-working position and a working position in which they rest against the toe of a shoe on a last contained is said last holding assembly, a second assembly of mechanical fingers also movable between a non-working position and a working position in which they are disposed between the fingers of the first assembly so as to make the vamp covering the last assume a pattern in the form of folds, its path passing under the fingers of one assembly and over the fingers of the other, and a third and a fourth assembly of mechanical fingers to the sides of the second assembly mobile backwards

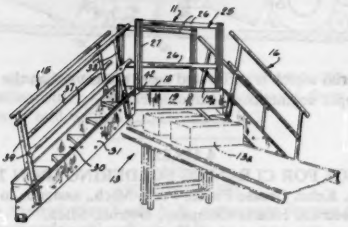
and forwards laterally to the first mechanical finger assembly and cooperate with said second mechanical finger assembly.

4,118,816

CROSSOVER OR BRIDGE

Douglas C. Mittag, Bolingbrook, Ill., assignor to Aurora Equipment Company, Aurora, Ill.

Filed Oct. 6, 1977, Ser. No. 839,840
Int. Cl.² E01D 1/00
U.S. Cl. 14—69.5 **17 Claims**



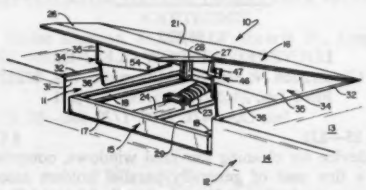
13. In combination, a crossover comprising a bridge section and a pair of angled stairways for connection with opposite ends of said bridge section and with the bridge section disposed in an elevated position relative to bottom ends of said angled stairways when assembled therewith, a pair of transversely spaced main crossover channels positioned at opposite sides of said bridge section, railing structure having lower ends secured at lower end areas to said main crossover channels of said bridge section, a riser panel end section positioned at each end of said channel and comprising a supported side rail of at least one of said stairways, a shelf structure mounted on each riser panel end section supporting said main crossover channels at one of its ends, fasteners joining the opposite ends of each main crossover channel to the associated riser panel end sections securing the main crossover channels in separated relation with the upper ends of said stairways, each opposite end of each main crossover channel being disposed in lapped secured assembly with the associated riser panel end section, crossover means positioned between said main crossover channels, and means securing said crossover means in supported assembly with said crossover channels.

4,118,817

TELESCOPIC TOW GUARD FOR A DOCK BOARD

Peter B. Burnham, Columbus, Ohio, assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Oct. 14, 1977, Ser. No. 842,082
Int. Cl.² E01D 1/00
U.S. Cl. 14—71.3 **11 Claims**



2. In combination with a dockboard incluidng a ramp having longitudinal sides and mounted on a pivot for swinging movement about an axis transverse to the sides in a vertical direction from a generally horizontal position to relatively elevated and a relatively depressed position; a toe guard comprising

a first elongated plate disposed in a vertical plane closely adjacent to and extending substantially the length of the side of the ramp, said first plate mounted at one end on a pivot disposed adjacent the ramp pivot for relative swinging movement in a generally vertical plane,

mechanical coupling means carried by said ramp and said first plate in relatively remote relationship to the respective pivot axis thereof, said coupling means operative on pivoting of the ramp to an elevated position to interconnect said first plate with said ramp for upward swinging thereof in conjunction with the ramp and to disconnect therefrom upon pivoting of the ramp to a relatively depressed position,

a second elongated plate disposed in coplanar relationship to said first plate and mounted on a pivot carried by said first plate for relative pivoting movement of said second plate in coplanar relationship to said first plate between a relatively telescoped position and an expanded position,

second mechanical coupling means carried by said first and second elongated plates for limiting relative rotational movement toward an expanded position, said second coupling means operative on pivoting of said first and second plates to said expanded position to interconnect said plates and to pivot said second plate in conjunction with said first plate, and

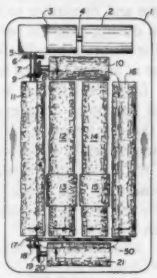
support means engageable with said first and second plates on downward swinging movement thereof to support said first plate in a predetermined position and to pivot said second plate into telescoped relationship thereto wherein said first plate, at the end opposite its pivot, has a vertical dimension substantially equal to the height of the dockboard and said second plate is pivoted to said first plate and adjacent a bottom edge thereof.

4,118,818

APPARATUS FOR CLEANING THE LOWER PORTION OF SHOES

Eileen M. Holleran, 188 Old Field Rd., Setauket, N.Y. 11733

Filed Apr. 8, 1977, Ser. No. 786,034
Int. Cl.² A47L 23/02
U.S. Cl. 15—36 **8 Claims**



1. Apparatus for cleaning the lower portion of a shoe comprising:

(a) a frame,

(b) a generally cylindrically shaped first brush with a length longer than that of the shoe to be cleaned and a brushing surface that substantially encompasses the round surface of the brush, said brushing surface including a raised portion that conforms to the instep of the shoe,

(c) means for mounting said first brush in a horizontal position in said frame for rotation of said brush about its longitudinal axis,

(d) a first power means for rotating said first brush,

(e) a support plate on which to rest the shoe while it is being cleaned, said plate having a plurality of openings to pass the soil from the shoe and an opening corresponding generally to the longitudinal cross section of said first brush, and

(f) means for mounting said plate in said frame in the hori-

zontal plane above the longitudinal axis of the first brush in a position to align the opening corresponding to the brush cross section with the brush and placing the plate at a level at which the upper surface of the brush is above the upper surface of the plate, whereby the brushing surface of the brush is exposed above the plate to clean the underside of a shoe while the shoe is protected by the plate from the power means for rotating said first brush.

4,118,819

FLOOR TREATING MACHINES

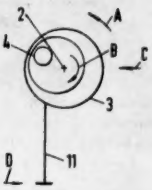
Sidney Gordon, Stanmore; John Thomas Wilkins, Bushey Heath, and Haydn Frank Mayo, Hazlemere, all of England, assignors to R. G. Dixon & Company Limited, Wimley, England

Filed Feb. 10, 1977, Ser. No. 767,572

Claims priority, application United Kingdom, Feb. 11, 1976, 5442/76; Feb. 11, 1976, 5443/76

Int. Cl.[2] A47L *11/162*

U.S. Cl. 15—49 R **6 Claims**



1. A floor treating machine of a single rotary brush type, comprising a frame disposed substantially horizontally to the floor and having a lower surface and an upper surface; at least two wheels rotatably mounted on said frame; a brush rotatably mounted on said lower surface of said frame and rotatable about a vertical axis; a motor fixedly mounted on said upper surface of said frame and operative to rotate said brush about said axis, said brush during rotation being subjected to a reaction couple with the floor; a handle for an operator and attached to said frame at an end thereof and extending angularly upward and away from said frame, so that an operator can apply forces to said handle to counteract the reaction couple on said brush and thereby create a tilting couple, said handle and said motor being laterally offset on said frame from said axis of rotation of the brush in a direction so as to impart a tilting couple opposed to that arising from operator forces applied to the handle to thereby counteract the reaction couple acting on said brush from the floor.

4,118,820

CAR WASHING APPARATUS WITH LONG SHALLOW ANGLE SIDE BRUSH

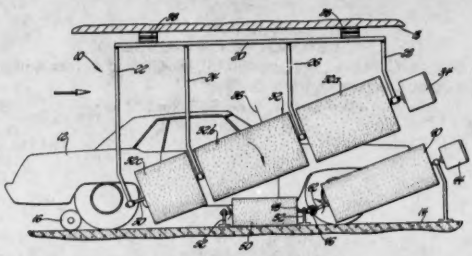
David J. Bivens, Danville, Va., assignor to Bivens Winchester Corporation, Danville, Va.

Continuation of Ser. No. 334,807, Feb. 22, 1973, abandoned. This application Sep. 23, 1976, Ser. No. 725,884

Int. Cl.[2] B60S *3/06*

U.S. Cl. 15—53 AB **13 Claims**

1. Vehicle washing apparatus including means defining a wash lane for a vehicle to be washed; brush support means adjacent said wash lane; a substantially cylindrical side brush carried by said support means for washing a side surface of a vehicle in said lane; said brush being disposed in an attitude of between about 10° and 45° from horizontal and of such length as to instantaneously contact the vehicle over at least about 50% of its overall length; and, means for rotating the brush about the longitudinal axis thereof to effect a scrubbing action on said side surface, said side brush comprising a plurality of axially spaced segments, said support means including a frame having depending arms secured to said brush between said segments, the lower segments of said brush comprising bristles



of a material which is stiffer and more abrasive than the bristles of the upper segments of said side brush.

4,118,821

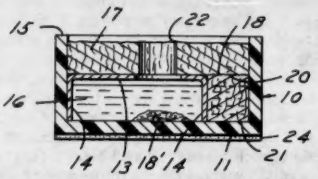
DEVICE FOR CLEANING SOLDERING IRON TIPS

Robert A. Kuhn, Grosse Pointe Park, Mich., assignor to American Electrical Heater Company, Detroit, Mich.

Filed May 13, 1977, Ser. No. 796,837

Int. Cl.[2] B05C *11/105*; B23K *37/00*

U.S. Cl. 15—104.92 **4 Claims**



1. A device for cleaning the outside surface of a solid pointed soldering iron tip comprising a case closed at the bottom and sides and open at the top forming a water reservoir, a shelf intermediate the bottom and top, a flat sponge pad supported by said shelf above the water level and a wick sponge contacting the underside of said flat sponge and extending into said water level, said shelf provided with a hole therethrough and said flat sponge pad having a central hole aligned with said shelf hole but of smaller size, and extending completely through the thickness thereof forming a cylindrical inner rubbing surface for receiving and engaging longitudinal tapering outer surfaces of said tip whereby the contaminants adhering to said outer tip surfaces can be removed by rubbing action to fall by gravity through the holes in sponge and shelf into the bottom of said water reservoir.

4,118,822

LOUVERED WINDOW CLEANER

John E. Gitter, 3258 N. 84th St., Milwaukee, Wis. 53222

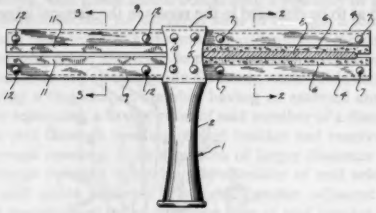
Filed Jun. 23, 1977, Ser. No. 809,281

Int. Cl.[2] A47L *1/08, 1/12*

U.S. Cl. 15—121 **4 Claims**

1. A device for cleaning louvered windows, comprising a handle, a first pair of generally parallel holders extending laterally in spaced relation from the handle substantially in the plane thereof, an absorbent strip adapted to hold cleaning liquid secured to each of said first holders with said pads being spaced apart to define a first slot to receive the window section to be cleaned, drawing said device across the window section acting to clean opposite surfaces of said window section, a second pair of generally parallel holders extending laterally in spaced relation and in the opposite direction from said handle, and a flexible squeegee blade member secured to each of said

second holders, said squeegee members being spaced apart to define a second slot to receive said window section, movement



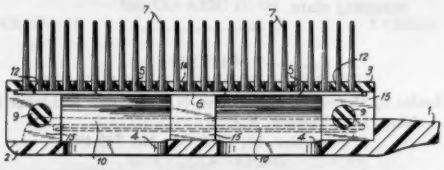
of said squeegee members across the window section serving to simultaneously remove the cleaning liquid from opposite surfaces of said window section.

4,118,823

HAIR BRUSH

Jerome Axelrod, New York, N.Y., assignor to Jerome Alexander Cosmetics, Inc., New York, N.Y.

Filed Mar. 18, 1977, Ser. No. 779,184
Int. Cl.² A46B 7/00, 9/02
U.S. Cl. 15—176 **9 Claims**



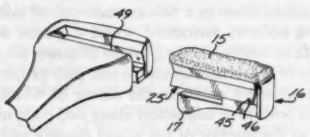
1. A hair brush comprising a handle and a base, said base being connected to said handle, an elastomeric cushion releasably secured to said base and having a brush face, at least one long narrow track within said cushion and having thereon a plurality of upstanding bristles substantially parallel to each other, said track being fixed relative to said base and said cushion and resiliently supported by said cushion, a plurality of openings through said cushion, each of said openings having only one of said bristles extending therethrough past said face, at least one vent through said base, said vent in communication with said openings, each of said openings being larger in cross section than each of said bristles and the width of said track whereby said track and bristles permit air to flow through said vent and said openings.

4,118,824

APPLICATOR HAVING INSERTABLE SPONGE CARTRIDGE

Paul Santas Clement, Jr., 5940 Wentworth St., Long Beach, Calif. 90815

Filed Jun. 24, 1977, Ser. No. 809,754
Int. Cl.² A47K 7/02
U.S. Cl. 15—244 R **3 Claims**



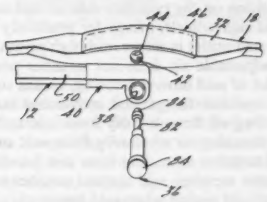
1. An applicator comprising:
a handle having a lower segment conformed for manual grasping and an upper segment conformed as an enlarged head, said upper segment including a lateral slot partly extending thereacross;
a mount conformed for telescopic insertion into said lateral slot;
a sponge cartridge including an elongate strip of sponge material attached to a thin-walled support conformed for interposed fit between said slot and said mount;
said slot including convolved interior surfaces and said mount including exterior surfaces conforming to the convolutions of said interior surfaces in said slot, said support being convolved in section for interspaced receipt between said interior and exterior surfaces; and
said interior and exterior surfaces each being convolved to include opposing V-shaped walls, said interior surfaces having the apex of the V conformed for sliding receipt in said mount.

4,118,825

CONNECTOR ASSEMBLY FOR WINDSHIELD WIPERS

Albert J. G. Hoebrechts, Mechelen Bovelingen, and Alex H. A. M. van Eekelen, Hasselt, both of Belgium, assignors to Monroe Auto Equipment Company, Monroe, Mich.

Filed Mar. 28, 1977, Ser. No. 782,096
Int. Cl.² B60S 1/40
U.S. Cl. 15—250.32 **19 Claims**

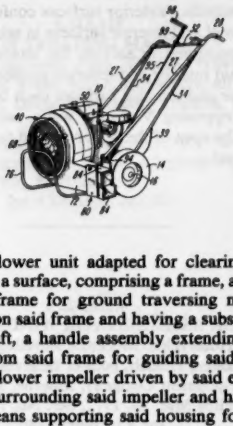


1. A connector assembly for operatively connecting a windshield wiper arm to the superstructure of an associated wiper blade having a yoke member comprising a central portion of generally inverted U-shaped cross section defining a pair of spaced apart generally parallel side sections and an upper transversely extending intermediate web section,
said assembly comprising an opening formed in the web section and a pair of laterally aligned apertures formed in the side sections,
means on the terminal end of said wiper arm defining an opening adapted to be aligned with said aligned apertures when said terminal end of said wiper arm is juxtapositioned along the outer side of one of said side sections of said yoke,
a removably mounted connector pin extending coaxially of said apertures for connecting said yoke member to said arm, and
an insert member having a longitudinally disposed upper portion arranged to cover said opening and a pair of cooperative downwardly projecting retaining fingers located between said side sections of said yoke and on the longitudinally opposite sides of said aligned apertures, said fingers being clampingly securable to diametrically opposite sides of the portion of said pin disposed between said side sections of said yoke to prevent axial withdrawal of said pin and inadvertent disassembly of said arm from said wiper blade.

4,118,826
MOBILE BLOWER UNIT FOR LEAVES AND OTHER DEBRIS

Arthur L. Kaeser, Springfield, Ohio, assignor to Parker Sweeper Company, Springfield, Ohio

Filed May 3, 1976, Ser. No. 682,385
Int. Cl.[2] A47L 5/14
U.S. Cl. 15—328 8 Claims



1. A mobile blower unit adapted for clearing leaves and other debris from a surface, comprising a frame, a set of wheels supporting said frame for ground traversing movement, an engine mounted on said frame and having a substantially horizontal engine shaft, a handle assembly extending rearwardly and upwardly from said frame for guiding said unit along a selected path, a blower impeller driven by said engine shaft, a blower housing surrounding said impeller and having an inlet and an outlet, means supporting said housing for rotation on generally the horizontal axis of said engine shaft and relative to said engine for selectively moving said outlet in a substantially vertical plane between a high position on one side of said unit and a low position on the opposite side of said unit relative to said frame and said wheels, means for positively securing said housing with said outlet in either said high position or said low position, an adjustable air deflector member positioned adjacent said outlet of said blower housing, means supporting said air deflector member for pivotal movement between a first position directing air downwardly from said outlet and a second position directing air upwardly from said outlet, an elongated control member extending from said handle assembly to said air deflector member, said control member being movable over the top of said engine when said housing is rotated on said horizontal axis to move said outlet in said vertical plane between said high and low positions, said handle assembly including means supporting said control member to provide for said movement over the top of said engine, and means connecting said control member to said deflector member and providing for remotely adjusting the position of said air deflector member between said first and second positions from said handle assembly when said outlet is located in said high and low positions on opposite sides of said engine.

4,118,827
DOOR HINGE ATTACHMENT DEVICE

Yukio Yamamoto, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

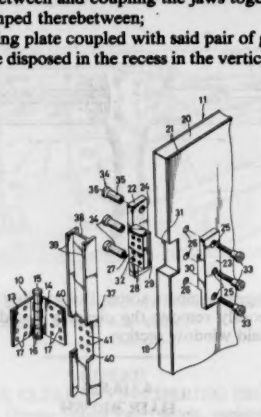
Filed Apr. 22, 1977, Ser. No. 790,083
Claims priority, application Japan, Apr. 30, 1976, 51-55394[U]
Int. Cl.[2] E05D 11/00; E06B 3/00
U.S. Cl. 16—137 9 Claims

1. A device for connecting the movable one of the leaves of a vertical axis butt hinge to a door having a recess in a vertical edge thereof, the movable hinge leaf having a first set of holes, said device comprising in combination:

(a) a pair of gripping jaws adapted to be disposed on the opposite sides of the door in spanning relationship to the recess in the vertical edge thereof, each of said gripping jaws having a second set of holes remote from the recess;

(b) fastener means adapted to extend through said second sets of holes in the jaws and through the door for rigidly connecting said pair of gripping jaws to the door by extending between and coupling the jaws together with the door clamped therebetween;

(c) a mounting plate coupled with said pair of gripping jaws so as to be disposed in the recess in the vertical edge of the door, said mounting plate having a third set of threaded holes; and

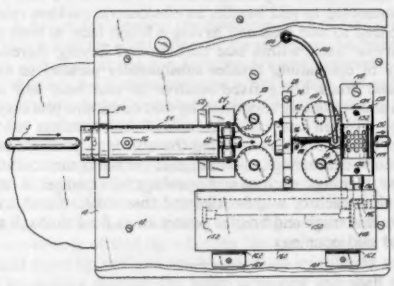


(d) a plurality of threaded fasteners adapted to pass through the first set of holes in the movable hinge leaf and threaded into said third set of threaded holes in said mounting plate.

4,118,828
APPARATUS FOR PEELING SAUSAGES

Leslie B. Melanson, Manasquan, N.J., assignor to Linker Machines, Inc., Newark, N.J.

Filed Dec. 10, 1976, Ser. No. 749,492
Int. Cl.[2] A22C 11/00
U.S. Cl. 17—1 F 3 Claims



1. Apparatus for peeling casings from a string of sausages comprising drive means for engaging the string of sausages and driving that string along a peeling path, said drive means comprising two spaced apart sets of two drive wheels, the wheels of each set being disposed on opposite sides of said peeling path, a knife assembly disposed adjacent said path to slit the casings of the sausages longitudinally, said knife assembly being located close to a downstream one of said sets of drive wheels, a hollow, perforated wheel disposed downstream of said knife assembly, housing means disposed about said wheel, a portion of said wheel closest to said path projecting from said housing whereby sausages, the casing of which are slit, pass over said portion of said wheel along said path, means applying suction to the interior of the wheel causing said casings to be removed from said sausages and adhere to said wheel and allowing sausages from which said casing is removed to continue along said path, guide means in said path for determining the position of said string of sausages relative to said knife

assembly and support means, said guide means being releasably mounted in said support means, said support means comprising a bracket disposed between said sets of drive wheels and having a through opening, said peeling path extending through said opening, said guide means comprising a plurality of guide elements dimensioned for different sizes of sausage, a selected one of said plurality being mounted in said support means and the remaining guide elements being available for replacement of said selected one of said guide elements, each guide element comprising a ring shaped member having an external annular shoulder separating a first portion of said member of a diameter equal to said through opening of said bracket and received in that through opening, from a portion of larger diameter than said through opening whereby said shoulder of said selected one of said guide elements abuts said bracket adjacent said through opening and on an upstream side of said bracket, said shoulder and said first portion of said ring shaped member constituting the sole means supporting said guide element in said bracket whereby said guide element is easily removed for replacement and for cleaning.

4,118,829

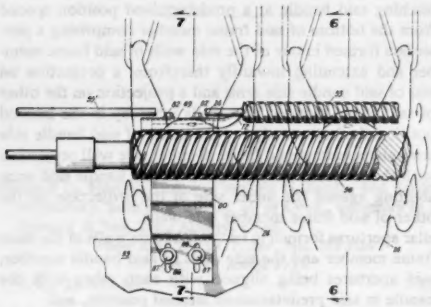
OPENING CUT MACHINE

Grover S. Harben, Jr., Gainesville, Ga., assignor to Stork-Gamco, Inc., Gainesville, Ga.

Continuation of Ser. No. 638,961, Dec. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 459,476, Apr. 10, 1974, abandoned. This application Jan. 28, 1977, Ser. No. 763,669

Int. Cl.[2] A22C *21/00*

U.S. Cl. 17—11 **5 Claims**



1. A machine for making an opening cut in poultry for evisceration comprising an overhead horizontal conveyor for depending shackles from which birds are suspended head downwardly by their hocks and with their tails facing in one direction laterally of the path of movement of the birds along said conveyor, a relatively stationary opening cut machine below said conveyor including upper and lower parallel horizontal axis counter-rotating tail gripping and advancing rollers each having a helical thread element thereon, the upper roller being smaller in diameter than the lower roller and having its rotational axis offset laterally from the axis of the lower roller so that a plane tangent to the peripheries of said rollers adjacent the tail sides of the birds is substantially vertical, the lower roller having a conically tapered upstream end portion spaced from the helical thread element of the upper roller for initial guidance of the tails of birds between said gripping and advancing rollers, the peripheries of the upper and lower rollers defined by said helical thread elements being spaced to form a tail receiving passage between said rollers, the helical thread element of the upper roller terminating upstream from the corresponding terminal of the helical thread element of the lower roller and the upper roller having a reduced diameter extension thereon downstream from the terminal of the helical thread element of the upper roller, and a stationary knife having a cutting edge extending into said tail receiving passage between the upper and lower rollers from the sides of the rollers away from advancing birds, said cutting edge extending longitudinally of the path of movement of the birds and longitudinally of the axes of said rollers, said cutting edge of said knife projecting laterally beyond the rotational axes of both rollers toward the tail sides of the birds and terminating in closely spaced relation to the tail sides and said tangent vertical plane, said knife and cutting edge arranged adjacent to said reduced diameter extension of the upper roller and having an upturned end portion at its upstream end to force the tails of birds downwardly into engagement with the helical thread element of the lower roller in the region thereof opposite to the reduced diameter extension of the upper roller, the arrangement being such that the helical thread elements of the upper and lower rollers constantly pull and stretch the tails of birds laterally into said tail receiving passage and toward the cutting edge of said knife while simultaneously advancing the tails longitudinally of the counter-rotating rollers thereby causing the knife to produce an opening cut precisely in each bird in the lower abdomen thereof between the tail and anus.

4,118,830

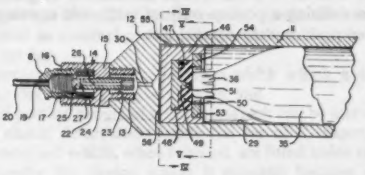
DEVICE FOR SKINNING ANIMALS AND FOWL

Richard J. Weiland, 217 Wahl Ave., Evans City, Pa. 16033

Filed Apr. 13, 1977, Ser. No. 787,229

Int. Cl.[2] A22B *5/16*

U.S. Cl. 17—21 **5 Claims**



1. A self-contained animal skinning device for communicating pressurized gas between the hide and flesh of animals and fowl, said device comprising a tubular container, a cartridge in which pressurized gas is sealed, carried within the container, means carried by said container operating to release pressurized gas from said cartridge to the interior of said container, and a hollow needle carried at one end of the said container, and communicating with the interior of said container, said needle having an exit port insertable between the hide and flesh of the animal and fowl for communicating pressurized gas thereto, said tubular container having a relatively small bore at the end thereof communicating with the interior of said tubular container, a sleeve fitting screw-threadedly engaged in said relatively small bore at one end thereof and having the said hollow needle in screw-threaded relation at its opposite end, said sleeve fitting having a diametric partition intermediate of its ends with a threaded hole therein, and a set screw adjustably screwed in said threaded hole, said set screw having a restricted longitudinal passage for restrictedly controlling the rate of flow of pressurized gas from the interior of said tubular container to said needle.

4,118,831

MOLDING DEVICE

James A. Holly, Richton Park, Ill., and Harry H. Holly, Boca Raton, Fla., assignors to Hollymatic Corporation, Park Forest, Ill.

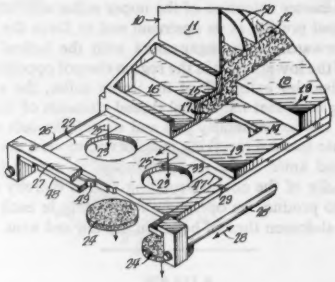
Filed Aug. 1, 1977, Ser. No. 822,222

Int. Cl.[2] A22C *7/00*

U.S. Cl. 17—32 **12 Claims**

1. A device for molding food articles of raw finely divided beef and similar tissue containing food material that is normally subject to uneven shrinkade during cooking, comprising: supply means for said material; a mold having a mold opening

including a peripheral edge; a supply passage means for supplying pressurized said material to said mold opening when said mold is in a mold filling position to form said articles, said passage having an exit at one edge of said mold opening of substantial width and a thickness that is a fraction of the thickness of said mold opening at said edge to project a thin ribbon



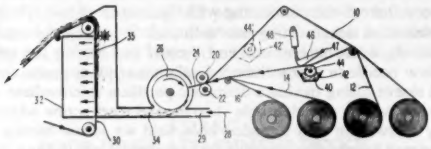
of said food material into the mold opening for filling said opening with said pressurized material; a closure for said exit having a width substantially equal to the width of said exit at the mold opening; and means for movably mounting said closure on said mold plate for movement between a forward position defining a portion only of said mold opening and a retracted position defining said exit.

4,118,832

METHOD FOR MINIMIZING THE ACCUMULATION OF STATIC CHARGES ON FIBERS RESULTING FROM FIBERIZATION OF PULP LAP SHEETS

Tralance O. Addy, Media, and David P. Gutman, Glen Riddle, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Sep. 13, 1976, Ser. No. 722,478
Int. Cl.[2] D04H *1/00*
U.S. Cl. 19—304 **17 Claims**



1. A method for minimizing excessive accumulation of static charges on fibers resulting from separating the fibers from pulp lap sheets in a dry-forming operation, said method comprising the steps of:

a. directing a plurality of pulp lap sheets into a stacked condition;

b. directing the stack of sheets in a downstream direction to a fiberizing device for separating fibers from the stack; and

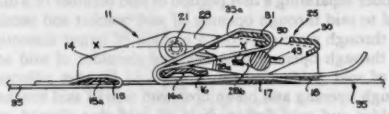
c. applying an antistatic chemical directly to a single surface of only one pulp lap sheet by directing a moving surface, with the chemical thereon, into engagement with said single surface as said sheet is being directed toward the fiberizing device, said single surface being disposed in the interior of the stack.

4,118,833

BUCKLE ASSEMBLY WITH STRAP TIGHTENING MECHANISM

Howard T. Knox, Simi, and Ernest Prete, Jr., Woodland Hills, both of Calif., assignors to Ancra Corporation, El Segundo, Calif.

Filed Jun. 9, 1977, Ser. No. 805,004
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—68 CD **2 Claims**



1. In a buckle for tightening a strap having a generally U-shaped main frame member with a pair of opposing side walls joined together by a plurality of cross-bars forming a bottom, one of which is centrally located and another of which is at one end of said frame member, and a handle member pivotally supported between the sides of said frame member and having a pair of side arms joined together by an inner and outer cross-bar, one end of the strap being looped around the inner cross-bar of the handle with the two legs of the loop being drawn under the centrally located cross bar of the frame member and out from the buckle, the other end of the strap being attached to the cross bar at said one end of said frame member, the improvement comprising:

means for stopping the downward travel of said handle and latching said handle at a predetermined position spaced from the bottom of said frame member comprising a projection formed in one of the side walls of said frame member and extending inwardly therefrom, a projection on one of said handle side arms and a projection on the other of said frame member side walls whereby in the latched position the bottom edge of the other of said handle side arms abuts against said frame member side wall projection with the projection on the other of said handle said arms abutting against the under side of the projection on the other of said frame member side walls,

similar apertures formed in each of the side walls of the main frame member and the side arms of said handle member, said apertures being aligned with each other with the handle in said predetermined latched position, and

security means for locking said handle in the latched position including a bar fitted through said apertures.

4,118,834

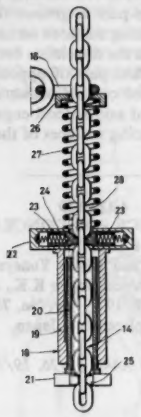
STRETCHING DEVICE

Erhard Alfred Weidler, Jahnstr. 32, 7080 Aalen-Unterkochen, Fed. Rep. of Germany

Filed Jun. 30, 1977, Ser. No. 811,623
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1976, 2631967
Int. Cl.[2] B60C *27/10*
U.S. Cl. 24—68 TT **18 Claims**

1. A stretching device for the stretching of a tire chain, used in conjunction with a stretching chain connected to said stretching device, said stretching device comprising a stretch-

ing spring, a stretching aggregate for stretching said spring, at least one stretching element, one end of said aggregate acting



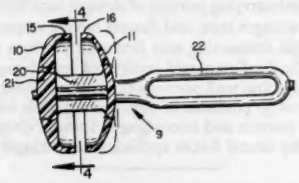
on said stretching element for holding said stretching chain stretched when said stretching spring is stretched.

4,118,835

ELASTIC FASTENER

Richard D. Harris, Albany; Franklin G. Smith, and Jerome F. Moshofsky, both of Portland, all of Oreg., assignors to R. D. Bussard & Son, Inc., Albany, Oreg.

Filed Apr. 20, 1977, Ser. No. 789,024
Int. Cl.² A44B *1/18*
U.S. Cl. 24—73 MC **5 Claims**



1. An elastic fastener for fastening together layers of material, comprising

a pair of elastic flange means adapted to fit on opposite sides of a plurality of layers of material and retain the same in face-to-face juxtaposition; and

an elastic shank means joining said flange means and adapted to pass through an opening in said layers of material,

one of said flange means having a base thickness enabling it to be flexed to facilitate pulling said one flange means through said opening, the other of said flange means having a thicker base than said one flange means so as to resist flexing and passage through said opening,

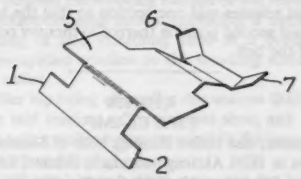
said flange and shank means being made of elastomeric material having a durometer of between about 65 and 75.

4,118,836

DEVICE FOR FIXING THE ELECTRODES OF ELECTROSTATIC DUST PRECIPITATOR FILTERS

Jean Duboc, Maurepas, and Bernard Poitier, Paris, both of France, assignors to Ceca S.A., France

Filed Jun. 14, 1977, Ser. No. 806,500
Claims priority, application France, Jun. 17, 1976, 76 18455
Int. Cl.² A44B *21/00*
U.S. Cl. 24—73 SA **4 Claims**



4. A metal device for fixing discharge electrodes on cross-pieces of a frame in such a manner as to constitute electrostatic dust removers, the cross-pieces being constituted by a bar of C-shaped cross section and having an opening of given width, the device consisting of a metal member having:

a flat portion provided with lugs (1) and (2) adapted to be inserted within the bar of C-shaped cross section,

a narrow portion, the width of which is smaller than the opening of given width of the bar,

an upper portion (5) which is to press firmly the electrode against an external portion of the opening of given width of the bar,

another narrow portion, having a width which is smaller than the opening of given width, and

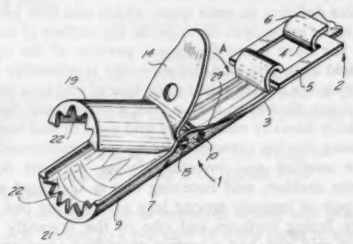
an end portion provided with lugs which can be introduced by elastic deformation inside the bar of C-shaped cross section and which, when released, are fitted inside the bar, whereby the device makes it possible, because of the insertion of two extremities provided with lugs inside the bar of C-shaped cross section to press firmly the electrode against an external part of the opening of given width.

4,118,837

BUCKLE FOR A BELT AND THE LIKE

Fritz Hoch, Pforzheim, Fed. Rep. of Germany, assignor to Gutos Metallschliessenfabrik Bader & Hoch KG, Pforzheim, Fed. Rep. of Germany

Filed Jun. 20, 1977, Ser. No. 808,144
Int. Cl.² A44B *11/25*
U.S. Cl. 24—75 **24 Claims**



1. A buckle for a belt and the like, comprising two elongated buckle members each adapted to retain a respective end portion of the belt, each of said buckle members including a first portion detachably connectable with the corresponding first portion of the other buckle member, and a second portion spaced from the respective first portion in the direction of elongation of the buckle member and adapted to confine the end portion of the belt therein, said second portion having at least two sections one of which is movable relative to another

between a first position in which the end portion of the belt is firmly retained between said two sections and a second position in which the end portion of the belt is released so as to be removable from said buckle member, each respective buckle member further including means for urging said one section into and arresting it in said first position, said means including an arresting element movable between an operative position in which said arresting element urges said one section into and arrests it in said first position thereof so as to retain the end portion of the belt, and a release position in which said arresting element releases said one section so that the latter is movable into said second position thereof to thereby release the end portion of the belt.

4,118,838

PIPE CLAMP

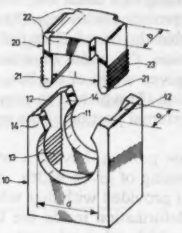
Erwin Schiefer, and Heinz Bisping, both of Munich, Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Apr. 12, 1977, Ser. No. 786,800

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616568

Int. Cl.² F16G *11/00*; A44B *21/00*

U.S. Cl. 24—115 R **6 Claims**



1. Pipe claim such as used for retaining pipe, cable and the like, comprising a U-shaped base part having a bottom surface, a top surface and sides extending between said bottom and top surfaces, said base part forming an opening therethrough between opposite sides thereof, a fastening clip engageable with said base part for securing pipe or the like in the opening through the base part, first engagement means located on said fastening clip, second engagement means located on said base part and engageable with said first engagement means for securing said fastening clip to said base part, wherein the improvement comprises that said sides of said base part comprise a first pair of opposite sides and a second pair of opposite sides with each of said sides having an inwardly facing surface and an outwardly facing surface and the inwardly facing surfaces of said sides defining an open space within said base part with the open space being open through the top surface of said base part and the open space forming a portion of the opening through said base part, said fastenihg clip is releasably insertable downwardly through the top surface of said base part into the open space therein so that at least a part of said fastening clip is wholly laterally enclosed by said sides of said base part, said fastening clip has outwardly facing surfaces directed away from one another and inwardly facing surfaces directed toward one another, said fastening clip is U-shaped and includes a pair of laterally spaced legs each having one of the outwardly facing surfaces and one of the inwardly facing surfaces of said clip, and a section extending transversely of and interconnecting one end of each of said legs, said fastening clip being insertable into the open space in said base part legs first, said second pair of opposite sides of said base part each having a U-shaped opening therein with the U-shaped openings extending to and through said top surface of said base part, the U-shaped openings communicating directly with the open space within said base part and in combination with the open space forming the opening through said base part, a major portion of the U-shaped openings including a major portion of the opposing sides thereof being arcuately shaped, the maximum diameter between the opposing arcuately shaped sides of the U-shaped openings through said second pair of opposite sides which diameter extends substantially parallel to the bottom surface of said base part is greater than the dimension between the inwardly facing surfaces on said legs of said fastening clip and is less than the dimension between the inwardly facing surfaces of said first pair of opposite sides, said first engagement means located on said outwardly facing surfaces of said fastening clip, and said second engagement means located on the inwardly facing surfaces of the sides of said base part.

4,118,839

RETAINING DEVICE FOR CONCEALED SLIDE FASTENER

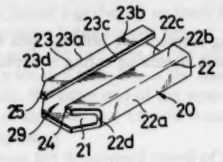
Akiyoshi Kando, Uozu, and Kiyoo Yoneya, Kurobe, both of Japan, assignors to Yoshida Kogyo K.K., Japan

Filed Apr. 19, 1977, Ser. No. 788,918

Claims priority, application Japan, Apr. 23, 1976, 51/51678[U]

Int. Cl.² A44B *19/26, 19/34*

U.S. Cl. 24—205.1 R **4 Claims**



1. A retaining device for a concealed type slide fastener in which a pair of stringer tapes are each folded along a respective confronting longitudinal edge to define a fastener element-carrying portion of the stringer tape with a fold connection to the remainder of the stringer tape and disposed in overlying relation thereto, and a pair of rows of interengageable fastener elements are supported each row by a respective fastener element-carrying portion, which device comprises a base and a pair of opposed inwardly directed flanges connected to said base to define therewith a generally straight channel for receiving therethrough a lengthwise section of interengaged fastener elements and their associated fastener element-carrying portions of stringer tape, said flanges having respective first wall portions positioned each between a corresponding fastener element-carrying portion of stringer tape and the remainder of said stringer tape, said flanges having respective second wall portions connecting said first wall portions to said base and laterally confining said section of interengaged fastener elements, said first wall portions extending beyond said second wall portions to positions of engagement with said fold connections to restrain said interengaged fastener elements against separation by lateral forces applied to the stringer tapes.

4,118,840

FASTENING HOOK

Gerd Fengels, Hagen, Germany, assignor to Brüggemann & Brand KG, Wetter, Ruhr, Germany

Filed Mar. 30, 1977, Ser. No. 782,775

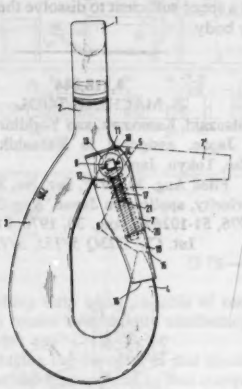
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614961

Int. Cl.² A44B *13/02*

U.S. Cl. 24—239 **10 Claims**

1. A fastening hook, particularly for high loads, said hook having an upper end comprising a loop, a hook portion, and a shank connecting said loop and said hook portion, said hook portion comprising a projection at its upper end having two limbs in spaced relationship, and a hook tip, and defining a gap between said projection and said hook tip, a closure member having an upper end and a free end adapted to engage said

hook tip, and means on said projection for mounting said closure member at its upper end for angular and translational movement from an open position to a closed position in which said closure member closes said gap, said mounting means comprising a pivot pin rotatably mounted on said projection and located against axial movement, said pin extending through said two limbs and having an exposed central portion, and wherein a spring having two ends is provided within said



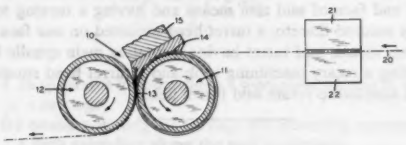
closure member to bias said closure member into the closed position in engagement with said hook tip, one of said ends of said spring acting on said central portion of said pivot pin and the other of said ends acting on a shoulder fixed in the interior of said closure member and spaced from said free end, whereby said free end of said closure member can be moved linearly into said closed position in which it engages said hook tip, and can be moved linearly out of engagement with said hook tip and then rotated about said pivot pin to an open position.

4,118,841

APPARATUS FOR COMPACTING WOVEN GAUZE BANDAGES

Edmund A. Diggle, Jr., Ho-Ho-Kus, N.J., assignor to Compax Corp., Woodside, N.Y.

Division of Ser. No. 730,313, Oct. 7, 1976, Pat. No. 4,041,581.
This application Mar. 3, 1977, Ser. No. 774,062
Int. Cl.[2] D06C *21/00*
U.S. Cl. 26—18.6 **2 Claims**



1. In a mechanical compacting apparatus for longitudinally compressively treating lightweight, woven gauze bandage material, of the type comprising

(a) a generally cylindrical feeding roller for engaging and forwardly advancing the gauze,

(b) a generally cylindrical retarding roller monted in opposed relation to said feeding roller and forming therewith a roller nip,

(c) an arcuate confining shoe closely embracing the surface of said feeding roller over a substantial arc,

(d) said confining shoe having a discharge edge located close to said nip and defining therewith a compacting zone,

(e) means for driving said feeding and retarding rollers such that the feeding roller has a higher surface speed than that of the retarding roller; the improvement characterized by

(f) said retarding roller being of metal construction and being formed with a diamond pattern surface knurl of about 40 pitch over its effective working surface area,

(g) said feeding roller being of metal construction and being formed with a straight pattern surface knurl of about 80 pitch over its entire working surface area;

(h) said straight knurl being so formed that the knurl pattern extends generally parallel to the axis of said feeding roller,

(i) said feeding roller having circumferentially extending surface-forming means at each end thereof and projecting radially beyond the working surface of the feeding roller,

(j) said surface-forming means providing a limit stop for positioning of said confining shoe in a predetermined minimum spaced relation to the working surface of the feeding roller,

(k) said roller nip being of smaller dimensions than the space between said feeding roller and said shoe, and

(l) said retarding roller being recessed in the areas opposite to said surface-forming means.

2. In a mechanical compacting apparatus for longitudinal compressively treating lightweight, woven gauze bandage material, of the type comprising

(a) a generally cylindrical feeding roller for engaging and forwardly advancing the gauze,

(b) a generally cylindrical retarding roller mounted in opposed relation to said feeding roller and forming therewith a roller nip,

(c) an arcuate confining shoe closely embracing the surface of said feeding roller over a substantial arc,

(d) said confining shioe having a discharge edge located close to said nip and defining therewith a compacting zone,

(e) means for driving said feeding and retarding rollers such that the feeding roller has a higher surface speed than that of the retarding roller; the improvement characterized by

(f) said retarding roller being of metal construction and being formed with a diamond pattern surface knurl of about 40 pitch over its effective working surface area,

(g) said feeding roller being of metal construction and being formed with a straight pattern surface knurl of about 80 pitch over its entire working surface area,

(h) said straight knurl being so formed that the knurl pattern extends generally parallel to the axis of said feeding roller,

(i) said feeding roller having bearing rings at each end projecting radially beyond the working surface of the feeding roller,

(j) said bearing rings forming a limit stop for positioning of said confining shoe in relation to said feeding roller,

(k) said roller nip being of smaller dimensions than the space between said feeding roller and said shoe, and

(l) said retarding roller being recessed opposite to said bearing rings.

4,118,842

WEAVE-DE-WEAVE PROCESS

Alan H. Norris, and Phillip W. Chambley, both of Rome, Ga., assignors to Champion International Corporation, Stamford, Conn.

Filed Jul. 8, 1977, Ser. No. 813,871
Int. Cl.[2] D02G *1/00*; D02H *9/00*
U.S. Cl. 28—218 **7 Claims**

1. In a weave-de-weave process in which weft is inserted in a direction normal to a plurality of warp yarns to stabilize the warp by forming a composite tape, and then after treatment of the yarns on the tape, the weft is removed to deweave the tape and the warp is packaged, the improvement comprising the steps of:

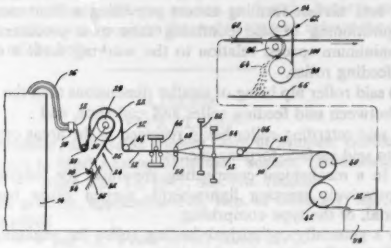
fluidly injecting said weft between said warp yarns alternately from opposite sides of said warp in continuous, spaced loops;

laterally splitting the interior of said tape generally parallel to said warp yarns into a plurality of tapes, exposing the looped ends of said weft intermediate the tapes and

stripping the weft continuously from said warp to deweave said tapes by

successively gripping the exposed looped ends of said weft and pulling said weft from between said warp.

7. In a weave-de-weave process in which weft is inserted in a direction normal to a plurality of warp yarns alternately from opposite sides of the warps yarns in continuous spaced loops to stabilize the warp by forming a composite tape, and then after treatment of the yarns on the tape, the weft is removed to



deweave the tape and the warp is packaged, the improvement comprising the steps of:

laterally splitting the interior of said tape generally parallel to said warp yarns into a plurality of tapes exposing interior looped portions of said weft intermediate the tapes, and

stripping the weft continuously from said warp to deweave said tapes by

successively gripping the exposed interior looped portions of said weft and pulling said weft from between said warp.

4,118,843

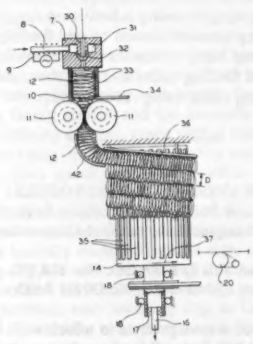
PROCESSES AND APPARATUS FOR THERMAL TREATMENT OF FILAMENTS

Heinz Schippers; Peter Dammann, and Karl Bauer, all of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Germany

Filed Jul. 13, 1977, Ser. No. 815,228

Int. Cl.[2] D02G *1/12, 1/16, 1/20*

U.S. Cl. 28—255 **27 Claims**



1. A process for the thermal texturizing treatment of multifile filaments of thermoplastic synthetic polymers which comprises feeding at least one multifile filament into a stuffing chamber and herein forming a closely packed, coherent filamentary body, conveying said tightly packed, coherent filamentary body from said chamber substantially tangentially onto the surface of a gas-permeable, rotating drum at the entrant zone thereof by rotating means engaging the exterior of said body and providing a positive axial thrust to said filamentary body between said stuffing chamber and said entrant zone of said drum, imparting a thrust to said body in the axial direction of said drum as it moves onto the drum surface, forming spiral convolutions of said filamentary body about the gas-permeable drum whereby rotation of said drum moves said spiral convolutions axially from the entrant zone on said drum to an exit zone thereon, passing a gas through the spirally convoluted, filamentary body and the gas permeable surface of said drum, and withdrawing the multifile filament from said exit zone at a speed sufficient to dissolve the coherently packed filamentary body.

4,118,844

MACHINE TOOL

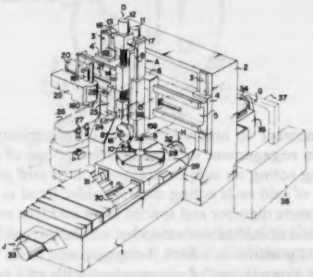
Hiroshi Matsuzaki, Kanazawa, and Yoshihiro Tsukiji, Komatsu, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 30, 1977, Ser. No. 829,193

Claims priority, application Japan, Aug. 30, 1976, 51-102691; Aug. 30, 1976, 51-102692; Aug. 30, 1976, 51-102693

Int. Cl.[2] B23Q *3/155, 3/157*

U.S. Cl. 29—27 C **10 Claims**



1. A complex machine tool comprising a bed; a table mounted on the bed so as to be slidably moved in the direction of longitudinal axis thereof; rotating means mounted on said bed to rotate said table; transfer means mounted on said bed so as to transfer said table in the direction of longitudinal axis of the bed; rotary indexing means adapted to index said table; a pair of columns installed vertically on either side of said bed; a cross rail transversely supported on said columns; ram means attached to said cross rail and adapted to be moved at right angles to the face of said table; a tool post mounted on to the lower end face of said ram means and having a turning tool fixedly secured thereto; a turret head mounted on one face of said ram means, said turret having a rotating main spindle for mounting a rotary machining tool; and a turret head rotating means adapted to rotate said turret head.

4,118,845

APPARATUS FOR PRODUCING FINE METAL FILAMENTS

August J. Schildbach, Concord, Mass., assignor to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 811,780, Apr. 1, 1969, Pat. No. 3,977,070. This application Jun. 11, 1976, Ser. No. 695,079

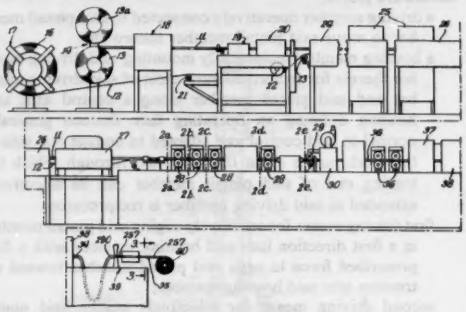
Int. Cl.[2] B21B *15/00*; B23P *17/00*

U.S. Cl. 29—33 K **5 Claims**

1. A machine combination used in producing a tow of fine metal filaments from a composite, each of said filaments initially comprising a metallic wire filament forming material surrounded by a constrictable sheathing material to prevent filament-to-filament contact until said sheathing material has been removed, said machine combination comprising:

(1) means for gathering a plurality of sheathed metal wires in a preselected array to form a compact bundle;

(2) means for forming a sheathing strip around said compact bundle, said strip having longitudinal edges;
(3) means for securing the edges of said strip to form and define a compact sheathed bundle wherein the sheathed metal wires are free from contact by said securing means



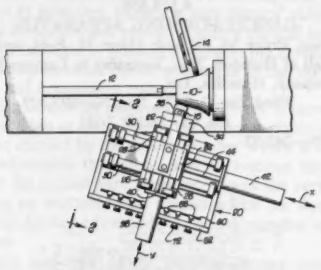
and said sheathing strip being capable of removal from said bundle by means substantially unaffecting said wire filament material; and
(4) means for reducing the diameter of said sheathed bundle to form the desired filament size in said composite.

4,118,846

BURNISHING ATTACHMENT

Helmut Gerhard Korte, San Pedro, Calif., assignor to Autospin, Inc., Carson, Calif.

Continuation of Ser. No. 639,902, Dec. 11, 1975, abandoned.
This application Apr. 8, 1977, Ser. No. 785,913
Int. Cl.[2] B24B *39/00*
U.S. Cl. 29—90 R **9 Claims**



1. In apparatus for burnishing a workpiece turning in a lathe:
(a) a carriage;
(b) means mounting the carriage for traversing movement in a path extending along the said workpiece;
(c) motor means for moving said carriage along its said path;
(d) a burnishing tool;
(e) means mounting said burnishing tool on said carriage for movement transverse to said path;
(f) motor means for urging said burnishing tool into engagement with said workpiece; and
(g) means for determining the force exerted by said motor means as a function of traverse position whereby the burnishing force varies to conform to the surface characteristics of said workpiece.

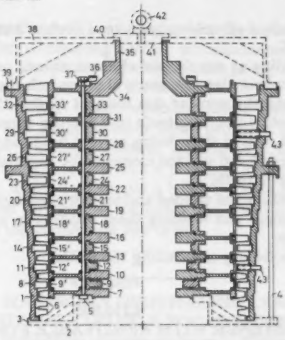
8. In apparatus for burnishing in a lathe:
(a) a carriage;
(b) means mounting the carriage for traversing movement in a path extending along the turning axis of said workpiece;
(c) motor means for moving said carriage along its said path;
(d) a cross head;
(e) means mounting the cross head on the carriage for movement transverse to said path towards and away from said turning axis;
(f) a non-rotary burnishing tool;
(g) means pivotally mounting said burnishing tool on said cross head on an axis substantially skew to the axis of the lathe;
(h) said tool having a burnishing surface located between the skew axis and said workpiece and generated about the pivot axis of the tool on a radius of curvature larger than the distance of said surface from said pivot axis whereby said tool stabilizes itself in a normal position to said workpiece; and
(i) means yieldingly urging said cross head toward said workpiece axis to cause said tool to engage said workpiece.

4,118,847

METHOD OF ASSEMBLING A TURBO-MACHINE, APPARATUS FOR USE IN THE METHOD, AND TURBO MACHINE CONSTRUCTED ACCORDING TO SAID METHOD

Martin Mansson, and Ragnar Torstenfelt, both of Finspong, Sweden, assignors to Stal-Laval Turbin AB, Finspong, Sweden

Filed Aug. 4, 1976, Ser. No. 711,667
Claims priority, application Sweden, Aug. 19, 1975, 7509230
Int. Cl.[2] B23P *15/00, 19/04*
U.S. Cl. 29—156.8 R **5 Claims**

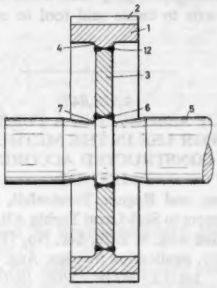


1. A method for assembling a turbo-machine of the type comprising a stator housing supporting guide vanes and a rotor having blade discs comprising the steps of:
placing the stator housing with its axis vertical upon a base member which supports said housing both in the vertical and horizontal direction,
alternately positioning guide vanes and blade discs in said housing with the guide vanes being secured to the interior of the hosing and with the blade discs being supported in stacked relationship with interleaved spacing rings on said base member,
securing together the stack of blade discs,
adjustably centering the rotor comprising the assembled blade discs and spacing rings relative to the stator housing,
interconnecting the uppermost ends of the stator housing and rotor,
lifting the interconnected stator housing and rotor from the base member and moving them to a horizontal position,
removing said base member, and
coupling the rotor of said assembled and horizontally aligned turbo-machine to a rotor of a further horizontally aligned rotary machine by passing a plurality of rotor coupling bolts through aligned apertures in the blade discs and spacing rings of said turbo-machine rotor and also through apertures in a part of the rotor of said further machine.

4,118,848
METHOD OF MAKING GEAR AND SHAFT OR HUB ASSEMBLIES

Rolf Goldschmidt, Witten,Annen; Klaus Hansgen, Witten, and Heinz M. Hiersig, Dusseldorf, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 7, 1977, Ser. No. 766,078
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2606245
Int. Cl.² B23K *31/02;* B23P *15/14*
U.S. Cl. 29—159.2 1 Claim

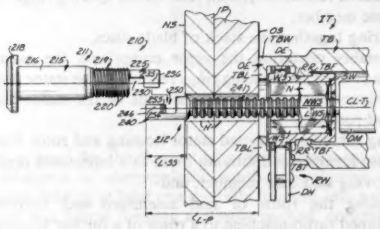


1. Method of making gears on a shaft or hub, comprising the steps of:
providing an annular rim element, at least one apertured disc or wheel element, and a shaft or hub element;
welding the annular rim element to the disc or wheel element and cutting teeth into the rim element, the welding and cutting steps being carried out in any sequence;
tempering the welded elements for hardening after the cutting of teeth;
assembling the welded and tempered elements with the shaft element and welding them together in a second welding step;
and polishing or grinding the teeth.

4,118,849
FASTENER WITH REMOVABLE PINTAIL AND LOCKING COLLET

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga. 30342

Division of Ser. No. 654,756, Feb. 3, 1976, Pat. No. 4,077,299, which is a continuation-in-part of Ser. No. 542,077, Jan. 17, 1975, abandoned, and Ser. No. 542,076, Jan. 17, 1975, Pat. No. 3,962,775, and Ser. No. 542,074, Jan. 17, 1975, Pat. No. 3,965,792, and Ser. No. 554,762, Mar. 3, 1975, Pat. No. 4,012,885. This application Aug. 30, 1977, Ser. No. 829,246
Int. Cl.² B23P *19/04*
U.S. Cl. 29—240 4 Claims

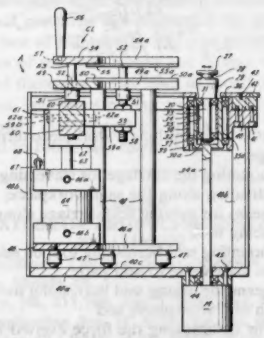


1. An installation tool construction for installing an elongate fastener having a bearing surface to be inserted through aligned holes in work pieces and a pintail connector on the leading end of the fastener adapted to be engaged to pull the bearing surface into the holes, said tool construction comprising:
a pintail member having a trailing end removably connectable to the pintail connector on the fastener to pull the bearing surface of the fastener into the holes through the work pieces;
a driving member operatively connected to said pintail member to move said pintail member therewith;
a housing member reciprocally mounting said driving member therein for reciprocal movement of said driving member and said pintail member along a central axis, said housing defining an operating face thereon generally normal to said central axis adapted to engage one side of the work pieces about the holes and through which the trailing end of said pintail member can be selectively extended as said driving member is reciprocated;
first driving means for selectively urging said pintail member in a first direction into said housing member with a first prescribed force to urge said pintail member toward retraction into said housing member;
second driving means for selectively urging said pintail member in a second direction opposite said first direction to selectively extend the trailing end of said pintail member from said housing member for connection of said pintail member to said pintail connector on said fastener; and,
third driving means for selectively urging said pintail member in said first direction with a third prescribed force greater than said first prescribed force sufficient to force the bearing surface into the holes through the work pieces when the fastener is connected to said pintail member.

4,118,850
GASKET FORMING APPARATUS

A. B. Owen; Bruce M. Gifford; Horst H. Bahl, and Lewis F. Akins, all of Houston, Tex., assignors to Lamons Metal Gasket Company, Houston, Tex.

Filed Jun. 7, 1976, Ser. No. 693,327
Int. Cl.² B21D *7/00*
U.S. Cl. 29—243.52 17 Claims



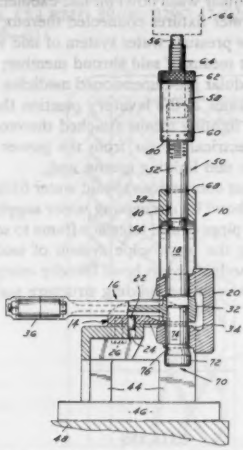
1. A metal forming apparatus for closing the metal shell at a corner of a double jacketed gasket assembly, comprising:
rotatable roller hammer means having a notch which is substantially U-shaped in cross-section for engaging a portion of the gasket shell to be closed; and
power means operably connected with the rotatable roller hammer means for reciprocating the rotatable roller hammer means relative to said metal shell for bending the metal shell without tearing it.

4,118,851

UNIVERSAL PISTON PIN REMOVER AND INSTALLER

David L. De Martelaere, 4176 Ramblewood, Troy, Mich. 48089

Filed Jul. 7, 1977, Ser. No. 813,540
Int. Cl.[2] B23Q *1/00*
U.S. Cl. 29—283 7 Claims



1. An automotive engine fixture for removing and installing piston pins including, in combination:

a support structure having a mounting surface shaped to receive and support a connecting rod and piston assembly of an automobile engine from or into which the piston pin is to be removed or installed respectively;

a piston pin driver member for advancing the piston pin in the bores of the piston and the connecting rod;

said support structure having a part thereof exhibiting an arched formation and provided with a vertical bore therethrough for slidably guiding the piston pin driver member in its advancements of the piston pin in the bores of the piston and connecting rod; and

a presetting device for controlling the extent of movement of the piston pin as advanced by the driver member including a sleeve carried by the driver member which is longitudinally adjustable therealong and is oversize the vertical bore of the arched part; the upper rim of the vertical bore forming an abuttable stop against which the sleeve abuts and stops further advance of the driver member and piston pin; and

said sleeve and said driver member having cooperating graduations marked thereon for signifying different settings of the sleeve to stop each size of piston pin at its centered position within the bores of the connecting rod and piston.

4,118,852

PISTON PIN REMOVER AND INSTALLER

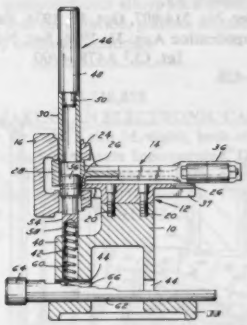
Peter F. Schneider, 5540 Elmgrove, Warren, Mich. 48092

Filed Jun. 3, 1977, Ser. No. 803,155
Int. Cl.[2] B23Q *1/00*
U.S. Cl. 29—283 1 Claim

1. An automotive engine tool for removing and installing piston pins including, in combination;

a base member having a support block occupying the upper part thereof and providing a mounting surface for the connecting rod and piston assembly of an automobile engine from which the piston pin is to be removed or installed, said support block being forked shaped at one end to enter the skirt of the piston and partially surround in load bearing relationship the boss of the connecting rod through which the piston pin bore extends,

a piston pin driver member of cylindrical shape having a larger diameter section substantially equal to the outer diameter of the pin and a smaller diameter section forming a reduced co-axial extension of the larger section, said reduced extension of the driver member having a diameter substantially equal to the inner diameter of the piston pin and forming at its juncture with the larger section an abrupt shoulder for first abuting the end of the piston pin into which the smaller section of the driver member is extended and then for driving the piston pin along the bore of said connecting rod boss, and



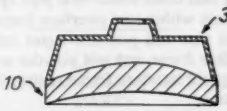
a gauge member disposed in alignment with the travel of the piston pin for terminating further advancements of the piston pin by the piston pin driver, said gauge member being adjustably mounted in the base member for varying its positional settings to accommodate piston pins of different sizes, said gauge member being provided for such purpose with a stepped contour serving as a series of blocking surfaces each of which is presentable opposite to the bore into which a piston pin is being installed in order to stop further advance of the piston pin when it is centered within the connecting rod bore.

4,118,853

METHOD OF MAKING AN OPHTHALMIC LENS OF PROGRESSIVELY VARIABLE FOCAL POWER

Bernard Mignen, Saint-Maur, France, assignor to Essilor International, Cie Generale d'Optique, Joinville-le-Pont, France

Filed Oct. 19, 1976, Ser. No. 733,700
Claims priority, application France, Oct. 30, 1975, 75 33143
Int. Cl.[2] B29D *11/00*
U.S. Cl. 29—424 7 Claims



1. A method of producing an ophthalmic lens of progressively variable focal power, in which a semi-finished blank is first obtained by casting an organic material between two casting dies, at least one of the faces of the blank having an active zone of progressively variable radius of curvature on at least one side of at least one central line, a gripper block for holding the blank is mounted on the said face of the blank by casting a material of low melting point between the said face and a bell-shaped mold which is open towards the said face, and the face of the blank lying opposite to that on which said gripper block is mounted is machined to the desired profile, the gripper block being subsequently removed by melting, wherein the improvement resides in forming at the periphery of the active zone of the said face of the blank, when the blank

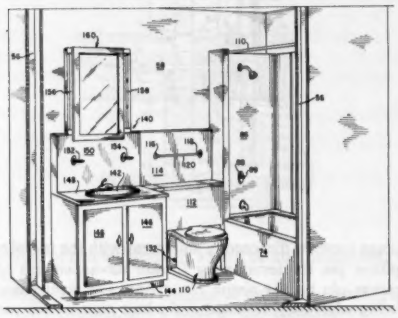
is cast an edge facet which extends continuously and circularly around the whole of the active zone to form a supporting face, providing the mould with a continuous free edge, and applying the free edge of the mold directly to the lens blank supportive face to form a tight seal therebetween.

4,118,854

POWDER ROOM AND BATHROOM SYSTEM AND METHOD OF ASSEMBLING SAME

Kurt Krafft, Prospect, Ky., assignor to Systems Design & Development, Prospect, Ky.

Division of Ser. No. 514,807, Oct. 15, 1974, Pat. No. 3,978,529.
This application Aug. 31, 1976, Ser. No. 719,270
Int. Cl.[2] A47K *4/00*
U.S. Cl. 29—428 **4 Claims**



1. A method of assembling a plurality of pre-dimensioned and pre-engineered modular units to form at least a powder room within a room section of a building structure, said room section having a wet wall having pressure water lines directed thereto and having a drain-waste-vent pipe unit positioned substantially vertically therein and connected to the drain-waste-vent system of the building structure, said building structure having an electrical power supply, comprising:

(a) pre-dimensioning a plurality of structural members;

(b) selectively assembling said structural members to form a template-like interface frame having at least two sections, one section defining a toilet position, the other section defining a lavatory position;

(c) selectively assembling a drain-waste-vent pipe system and pressure water system for said interface frame for said powder room;

(d) installing said drain-waste-vent pipe system and pressure water system within said interface frame to form a drain-waste-vent pipe and pressure water interface system for said interface frame and said powder room;

(e) mounting said interface frame against the wet wall of the room section;

(f) connecting said interface drain-waste-vent pipe system to said drain-waste-vent pipe unit positioned within the wet wall;

(g) securing a pre-dimensioned shroud member to said interface frame at the toilet position thereof, said shroud member defining a finished wall portion and having means to receive and accumulate water therein and control means to selectively release flush water through an opening defined by a lower portion of the water accumulating means;

(h) installing against said shroud member, a modular pre-dimensioned toilet bowl having a rear flush water inlet opening and a rear flush water outlet opening while substantially simultaneously connecting said water inlet opening of said modular toilet bowl to the water outlet opening of said shroud member in sealed relation therewith, and the flush water outlet opening of said modular toilet bowl to the drain opening of said drain-waste-vent system in sealed relation therewith;

(i) installing a modular pre-dimensioned cabinet against said interface frame adjacent the lavatory section of said interface frame;

(j) installing a modular wash bowl on said cabinet, said wash bowl having water fixtures connected thereto;

(k) connecting the pressure water system of said wet wall to said water inlet means of said shroud member;

(l) installing a modular pre-dimensioned medicine cabinet on said interface frame at the lavatory position thereof, said cabinet having lighting means attached thereto;

(m) providing electrical power from the power supply of said building to said lighting means; and

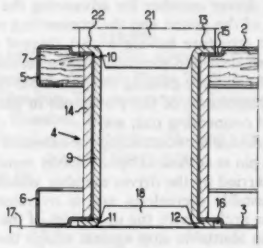
(n) providing water connections to said water fixtures of said modular wash bowl by connecting water supply conduits from the water pipes of said interface frame to said fixtures and connecting the waste pipe system of said interface frame to said modular wash bowl thereby completing the connections between the building structure and the powder room.

4,118,855

METHOD OF INTERCONNECTING TWO MEMBERS

Christian Lequeux, Metz, France, assignor to Union Financiere et Industrielle S.A., Liege, Belgium

Filed Jun. 22, 1976, Ser. No. 698,645
Claims priority, application France, Jun. 23, 1975, 75 19585
Int. Cl.[2] B23P *11/02*
U.S. Cl. 29—447 **5 Claims**



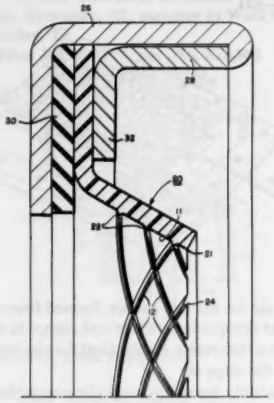
3. A method of interconnecting two members each having a planar part, which method comprises,

placing assembly tubes, each of which tubes has a first external right-angled flange at one end thereof, vertically on a support on the flange, engaging a first member having circular apertures on the assembly tubes such that the edge of the apertures of the first member is borne by the first flanges of the assembly tubes, positioning an unflanged bracing tube over each assembly tube above the first member so as to apply the bottom edge of each bracing tube to the edge of each aperture in the first member, positioning a second member having circular apertures over the assembly tubes and above the bracing tubes so as to apply the edge of the apertures in the second member to the top end of the bracing tubes, and bending the second projecting end of the assembly tubes outwardly at right-angles while the assembly tube is in a heated condition to form a second flange in contact with the periphery of the apertures in the second member, whereby an assembly is obtained in which planar parts of the members are in parallel spaced apart relationship with respect to each other.

4,118,856
BI-DIRECTIONAL HYDRODYNAMIC SHAFT SEAL METHOD

Dean R. Bainard, Clover, S.C., and Dennis N. Denton, Bessemer City, N.C., assignors to Garlock Inc, Rochester, N.Y.

Filed Dec. 2, 1974, Ser. No. 528,809
Int. Cl.[2] B21D *39/06;* B29C *17/02;* F16J *15/54*
U.S. Cl. 29—511 15 Claims

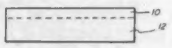


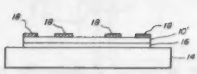
1. A method for making a sealing element having a sealing lip and having a plurality of pumping elements on a shaft contacting surface thereof for feeding back to said sealing lip any fluid leaking past said sealing lip, said method comprising forming a series of pumping elements in the shape of non-concentric circles on said surface of said element while said element is substantially flat, and then forming at least a portion of said flat element into a conical lip type seal with a sealing lip such that said pumping elements become helical or elliptically shaped pumping elements.

4,118,857
FLIPPED METHOD FOR CHARACTERIZATION OF EPITAXIAL LAYERS

Theodore T. S. Wong, Maynard, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 12, 1977, Ser. No. 758,609
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—574 1 Claim





1. A method of characterizing an epitaxial layer of semiconductive material on a first substrate, the epitaxial layer having a first surface, the method comprising:

attaching a second substrate to the first surface;

removing the first substrate to expose a second surface of the epitaxial layer;

reducing the thickness of said epitaxial layer by lapping material from said second surface while leaving a remaining epitaxial layer of defined thickness and including said first surface;

attaching electrical contacts to the exposed surface of said remaining epitaxial layer;

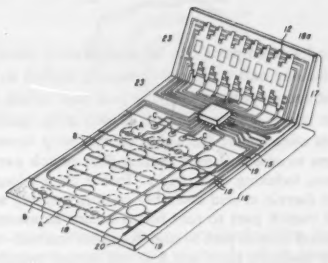
performing Hall effect measurements on the remaining epitaxial layer for characterizing said layer;

and wherein the semiconductive material is preferably selected from semiconductor alloys such as indium arsenide antimonide, lead tin telluride, gallium arsenide phosphide, and mercury cadmium telluride.

4,118,858
METHOD OF MAKING AN ELECTRONIC CALCULATOR

James B. Taylor, Jr., and Keith M. Cobb, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 678,102, Apr. 19, 1976, abandoned. This application Mar. 11, 1977, Ser. No. 777,282
Int. Cl.[2] H01H *13/26*
U.S. Cl. 29—622 10 Claims



1. A method of manufacturing electronic calculator comprising the steps of:

(a) forming a pattern of conductors on an insulative substrate;

(b) forming a keyboard on said substrate;

(c) attaching the leads from a semiconductive logic device to selected conductors formed on said substrate; and

(d) attaching the leads from at least one tape-mounted display device to selected conductors formed on said substrate, said tape-mounted display device having leads supported by the tape mounting said display device to at least two different distances from an axis of said display device.

4,118,859
PACKAGING AND ASSEMBLY OF SHEET METAL PARTS

Willard Leroy Busler, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 1, 1976, Ser. No. 746,272
Int. Cl.[2] H01H *11/00*
U.S. Cl. 29—622 10 Claims

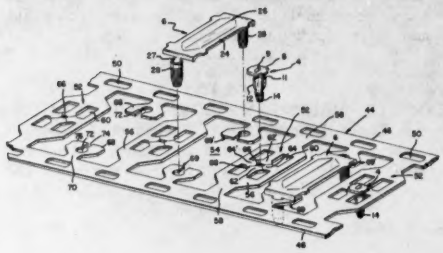
1. A continuous strip containing a plurality of first switch parts and a plurality of second switch parts, said first and second switch parts being intended for assembly to circuit board means to form a circuit board switch, said strip comprising:

a continuous carrier strip having parallel side edges, said carrier strip being of a thin easily deformed material,

a plurality of first openings in said strip and a plurality of second openings in said strip, said openings being spaced-apart along the length of said strip with said openings in alternating order so that a first opening is between adjacent second openings, said openings having internal edge

portions which are between said parallel side edges and which define said openings, said strip having flexible internal integral cantilever arm means extending from said internal edge portions,

each of said first switch parts being in one of said first openings and each of said second switch parts being in one of said second openings, said first and second switch parts each having supported portions which extend over surface portions of said cantilever arm means and are supported by said cantilever arm means whereby,



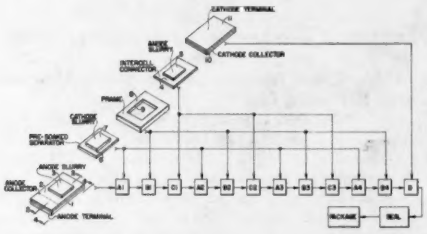
said first and second parts can be assembled to circuit board means by feeding said strip to an assembly station so that the leading first switch part on said strip is at said station, locating said circuit board means adjacent to said strip, pushing said leading first switch part from said carrier strip towards said board means to assemble said leading first switch part to said board means, indexing said strip to locate the leading second switch part therein at said assembly station, pushing said leading second switch part to said board means to assemble said leading second switch part to said board means, and repeating said steps to assemble all of said first and second switch parts in said strip to said circuit board means.

4,118,860

METHOD OF MAKING A FLAT BATTERY

Sheldon A. Buckler, Lincoln; Fredric S. Cohen, Waltham, and David P. Kennedy, Cambridge, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 27, 1977, Ser. No. 763,058
Int. Cl.² H01M 6/00
U.S. Cl. 29—623.5 **31 Claims**



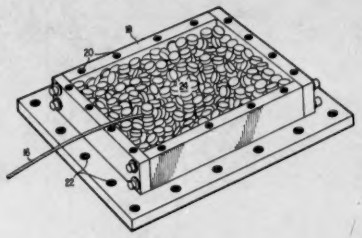
1. The method of making a zinc slurry anode, comprising the steps of dispersing from 80 to 90 parts of zinc powder in from 10 to 20 parts of water to form a zinc dispersion, coating said zinc dispersion on a thermoplastic substrate filled with carbon, and contacting said coated zinc dispersion with an aqueous solution of electrolyte to permeate said zinc dispersion with electrolyte by diffusion.

4,118,861

REMOVABLE ENCAPSULANT FOR PROTECTION OF ELECTRONIC EQUIPMENT

Rocco Richard Palmisano, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 6, 1976, Ser. No. 656,050
Int. Cl.² H01B 19/00
U.S. Cl. 29—631 **3 Claims**



1. A new use for silicone rubber, formed from the reaction of a prepolymer comprising a silane and silanol in the presence of a catalyst, as a removable encapsulent for electronic equipment comprising the steps of:

dividing a body formed of said silicone rubber into pellets;

pouring said pellets of silicone rubber material into a housing containing electrical equipment so as to fill the voids between said housing and said electrical equipment; and,

enclosing said housing to prevent said silicone rubber pellets from falling out of said housing; thereby,

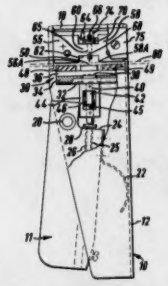
surrounding said electronic equipment with said pellets so as to substantially reduce the sensitivity of said electronic equipment to shock and vibration without significantly increasing the total weight of said equipment.

4,118,862

DIELECTRIC OPTICAL WAVEGUIDE SEVERING APPARATUS

Paul Christopher Hensel, Woodbridge, England, assignor to The Post Office, London, England

Filed Jul. 14, 1977, Ser. No. 815,508
Claims priority, application United Kingdom, Aug. 13, 1976, 33832/76
Int. Cl.² B26B 17/02
U.S. Cl. 30—124 **10 Claims**



1. A device for severing a dielectric optical waveguide comprising knife means, means for clamping dielectric optical waveguide in closely spaced relationship with said knife means, an anvil which is movable towards said knife means, the anvil being so arranged and constructed that, in use, as it moves towards the knife means, it engages a dielectric optical waveguide clamped by said clamping means and urges it

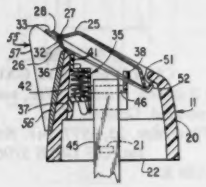
towards the knife means, the surface of the anvil which contacts said waveguide being curved and the arrangement being such that as the waveguide comes into contact with the knife means, it is under a given stress and has a predetermined configuration, and means for effecting movement of the anvil.

4,118,863

HAIR TRIMMING HEAD

Julius W. Sandy, Sycamore, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill.

Filed Jul. 8, 1977, Ser. No. 813,881
Int. Cl.² B26B *19/22*
U.S. Cl. 30—195 **10 Claims**



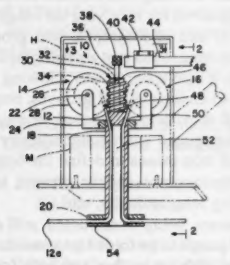
1. A hair trimming head, comprising:
a support;
a stationary blade mounted rigidly on said support, said stationary blade having an exposed forward edge containing cutting teeth, said cutting teeth having an effective cutting length of the order of one or two times the diameter of human hair;
a movable blade having an exposed forward edge containing cutting teeth several times the length of the cutting teeth of said stationary blade;
means mounting said movable blade for reciprocating lateral movement at a frequency significantly greater than manual frequency with respect to said support;
said stationary and movable blades being mounted in effective cutting relation with the teeth of said movable blade projecting beyond the ends of the teeth of said stationary blade, whereby hair first engages the teeth of said movable blade and is agitated and fed in controlled manner between said teeth into engagement with the teeth of said stationary blade for cutting at a rate such that overcutting is avoided.

4,118,864

INCREMENTAL FEED MEANS AND METHOD FOR FILAMENT-TRIMMER FILAMENTS

Charles B. Pittinger, Sr., P.O. Box 68, Rte. 1, Weatherford, Tex. 76086, and Charles B. Pittinger, Jr., 320 Cockeys Mill Rd., Reisterstown, Md. 21136

Filed Feb. 24, 1977, Ser. No. 771,426
Int. Cl.² A01D *55/18*; B26B *27/00*
U.S. Cl. 30—276 **26 Claims**



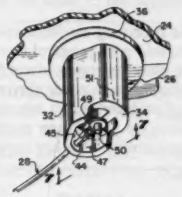
1. In an incremental filament-feed for a rotating shaft filament trimmer employing cutting length adapted to produce filament pulling force during cutting operations, the improvement comprising: spooling means for storing filament in wound condition; means for unwinding said filament from the spooling means in pulses for feeding filament during cutting operations in response to said filament pulling force, including: means holding the spooling means on the shaft for rotation therewith, a worm, the spooling means having a portion engaging the worm for rotational constraint by the worm, and means for causing the worm to move axially along the shaft and rotatably about the shaft for releasing the spooling means to feed an increment of filament.

4,118,865

ASSEMBLY FOR REMOVABLY ATTACHING FLEXIBLE CUTTING LINE ELEMENT IN GRASS TRIMMER

Anthony Jacyno, Columbia, Mo., and Richard T. Smith, St. Charles, Ill., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 14, 1977, Ser. No. 759,424
Int. Cl.² B26B *27/00*; A01G *3/06*
U.S. Cl. 30—276 **28 Claims**



1. In a grass trimmer having rotatable drive means and a cutting element comprising a relatively short length of nonmetallic, flexible cutting line, a connector having an aperture of a predetermined shape defined therein provided at a first end of said cutting line, an assembly for removably attaching the length of cutting line to said rotatable drive means for spinning said line, said assembly comprising: a hub member coupled to said drive means for rotation thereby, said hub member including a post extending outwardly from the free end thereof, said post being shaped complementarily to the shape of said aperture in said connector and dimensioned for receipt in said connector aperture, with limited play between said post and connector, and rim means extending outwardly from and along at least a portion of the free end of said hub member and being spaced from said post, said rim means defining an aperture extending substantially radially with respect to the axis of rotation of said hub member, the end of said length of cutting line opposite said connector being receivable in said radial aperture with the last-mentioned end extending radially outwardly from said rim means and said post being receivable in the aperture of said connector for removably attaching said length of cutting line to said hub member, the free end of said post extending outwardly from said hub member beyond the point at which the radially extending aperture in said rim means is defined to ensure that said length of cutting line remains secured to said hub member.

4,118,866

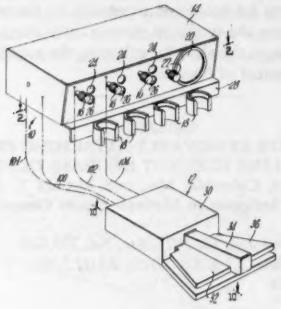
DENTAL HANDPIECE CONTROL APPARATUS

Robert G. Ross, E. Northport, N.Y., and Mark M. McCracken, Richardson, Tex., assignors to Parkell Products, Inc., Farmingdale, N.Y.

Filed Aug. 16, 1976, Ser. No. 714,943
Int. Cl.² A61C *19/02*
U.S. Cl. 32—22 **8 Claims**

5. A dental air-water handpiece control system for use with a source of water and a source of air and for operating a plural-

ity of handpieces and an air-water syringe, comprising a pedal control unit including a plurality of pedals, each for separately controlling operation of a particular handpiece, a plurality of separable and replaceable control modules, each for controlling air and water flow for a particular handpiece and a laminated base plate defining channels for enabling water and air



flow, said base plate receiving air from said source of air and for distributing air to said pedal control unit for control by said pedals and said base plate receiving water from said source of water and for distributing said water through said modules in response to action of said pedals, all adapted and arranged to operate one handpiece by use of one module and one pedal, without regard to operability of other modules and pedals.

4,118,867

MICROMETER HEAD FOR INTERNAL MEASUREMENT INSTRUMENT

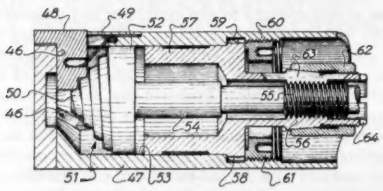
Georges Lendi, Crissier; Nicolae Voinescu, Lausanne, and Rene De Trey, Bussigny, all of Switzerland, assignors to Tesa S.A., Vaud, Switzerland

Filed Jun. 21, 1977, Ser. No. 808,550

Claims priority, application Switzerland, Jun. 23, 1976, 8006/76; Jun. 2, 1977, 6751/77

Int. Cl.[2] G01B 5/08

U.S. Cl. 33—164 C **10 Claims**



1. A micrometer head for an instrument for measuring internal dimensions, comprising:

(a) a casing having at least a radial slot formed therein;

(b) at least one radial measuring key, said measuring key slidably mounted within said radial slot;

(c) a threaded member connected to said casing;

(d) a spindle having a coaxial measuring micrometer screw connected thereto, said micrometer screw engaged in said threaded member;

(e) a cone means coaxial to said spindle, said cone means at least angularly connected to said spindle;

(f) a stepped inclined base means on said measuring key for contact thereof with said cone means, said inclined base means comprising at least one contact zone inclined at an angle (α) less than the angle (β) of the generitricies of said cone means with respect to the rotation axis thereof;

(g) a tapered spiral ramp on said cone means providing a path of contact for said contact zone, said tapered spiral ramp path of contact constituted by the base of a groove having a cross-section which forms an acute-angled triangle with the generitricies of said cone means; and

(h) return means for maintaining said contact zone of said measuring key in contact with said groove base path of contact of said cone means, such that high sensitivity and low contact pressure exist between said cone and said measuring key.

4,118,868

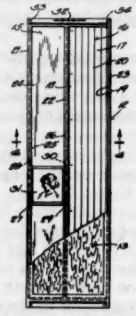
CHILD HEIGHT GAUGE

Dennis Elmer Johnson, Grafton, Wis., assignor to Densen Common, Incorporated, Grafton, Wis.

Filed Mar. 23, 1977, Ser. No. 780,628

Int. Cl.[2] G01B 3/06

U.S. Cl. 33—169 R **5 Claims**



1. A device for obtaining and recording data relative to a person and for holding photographs of a person in proximity with pertinent data comprising:

a series of rigid panels for being disposed vertically adjacent each other in end to end relationship, said panels each having a front and a rear face,

hinge means for joining adjacent panels in articulated fashion,

each front face having laterally spaced apart parallel longitudinally extending ribs defining a pair of adjacent channels,

a corresponding channel on each of said panels having a portion of a scale for measuring the height of a person and providing an area for recording data,

two of said ribs defining one channel having longitudinally extending grooves for receiving the longitudinally extending edges of said photographs, said grooves being open toward each other such that a photograph may be inserted by forming it into a curve and allowing it to expand for said edges to engage in said grooves, respectively,

a plurality of stop means disposed in a groove, said stop means being spaced apart longitudinally for consecutive pairs of said stop means to define the boundaries between adjacent photographs and to prevent said photographs from shifting longitudinally, and

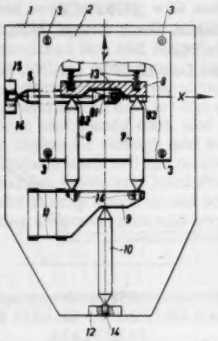
said hinge means being constructed and arranged for enabling said panels to be folded into parallel and flat contact relationship with each other and with front faces of adjacent panels in said series facing each other so that said data and photographs will not be exposed when said device is folded.

4,118,869

DEVICE FOR POSITIONING AN OBJECT

Stephan Hartung, and Erhard Jaksch, both of Dresden, German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed Mar. 2, 1977, Ser. No. 773,635
Int. Cl.[2] G01B 5/25
U.S. Cl. 33—174 TA 4 Claims



1. Device for positioning an object comprising
a reference plate,
an object mount for supporting said object seated on said reference plate,
said object mount being displaceable in a first direction, in the *x*-coordinate, of an *x*, *y*-coordinate system and in a second direction, in the *y*-coordinate being at right angles to said first direction, and being rotatable in a plane defined by said *x*, *y*-coordinate system,
a bearing means,
said bearing means being secured to the object mount face being in opposition to said object, said bearing means being provided with a first, a second, and a third contact face,
said first contact face being in the intersection of said *x*, *y*-coordinates,
said first and said third contact face being arranged along the *x*-coordinate,
a first, a second, and a third displacement member for displacing said object,
a first, a second and a third seating,
said seatings being mounted on said reference plate, said first member being for displacement of said object in *x*-direction,
and being arranged between said first contact face and said first seating,
said second and said third displacement member for displacing said object in *y*-direction and for angular displacements,
said second and said third displacement member being arranged in parallel to the *y*-coordinate between said second and said third contact face and said second and third seating.

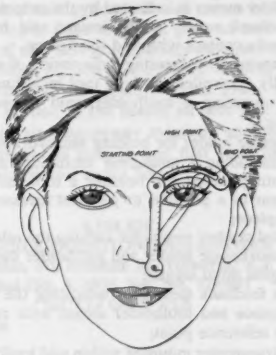
4,118,870

EYEBROW CONTOUR GUIDE

Evelyna Chelsey Dyson, Tenafly, N.J., assignor to Revlon, Inc., New York, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,066
Int. Cl.[2] G01B 3/14
U.S. Cl. 33—174 D 3 Claims

1. An eyebrow contour guide comprising a scaled alignment member which is placed on the nose, a movable scaled arcuate member having therein an arcuate slot, which is placed over the eyebrow, one end of said arcuate member being pivotally secured to the top end of the alignment member, a sliding member adapted for movement along the length of the alignment member, and a movable pointer one end of which is



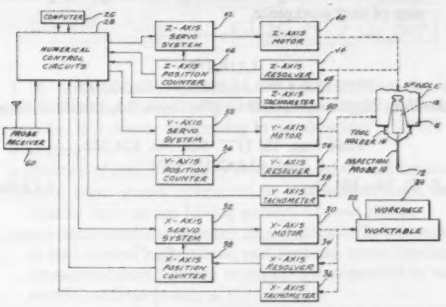
pivotally attached to the sliding member and whose other end moves arcuately on the scale of the arcuate member.

4,118,871

BINARY INSPECTION PROBE FOR NUMERICALLY CONTROLLED MACHINE TOOLS

Edward E. Kirkham, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Jun. 13, 1978, Ser. No. 805,914
Int. Cl.[2] G01B 7/00, 7/28
U.S. Cl. 33—174 PC 3 Claims



1. A method of measuring a dimension of a workpiece in a numerically controlled machine tool, said machine tool including a workpiece holder for holding said workpiece;
means including a detachably mounted toolholder for holding a tool in a position to perform work on said workpiece;
numerical control means for varying the relative position of said workpiece holder and toolholder means in response to digital input signals; and
position feedback means indicating the position of said workpiece holder and toolholder means with respect to a machine reference point, said method comprising the steps of:
(1) mounting a toolholder including an inspection probe in said toolholder means;
(2) causing relative motion between said toolholder means and said workpiece holder in the direction of decreasing the distance between said workpiece and inspection probe;
(3) stopping relative movement of said toolholder means and workpiece holder after said inspection probe makes contact with said workpiece;
(4) causing relative motion between said toolholder means

and said workpiece holder in the direction of separating said workpiece and inspection probe; and

(5) recording the position of said workpiece and toolholder means as indicated by the output of said position feedback means at the instant said inspection probe breaks contact with said workpiece.

2. Apparatus for measuring a dimension of a workpiece in a numerically controlled machine tool including means for detachably mounting a toolholder, said measuring apparatus comprising:

a workpiece holder for holding said workpiece;

means including a measuring toolholder mounted in said mounting means for holding a tool including a probe element in a position to perform measurements on said workpiece;

numerical control means for varying the relative position of said workpiece holder and toolholder means in response to digital input signals;

position feedback means for indicating the position of said workpiece and toolholder means with respect to a machine reference point;

a radio transmitter mounted within said toolholder and being operatively connected to said probe element for producing an electromagnetic output, said output changing in response to said probe element contacting said workpiece;

means for radiating the electromagnetic output of said radio transmitter;

a radio receiver for receiving the electromagnetic radiation from said probe element, the output of said radio receiver being coupled to said numerical control means; and

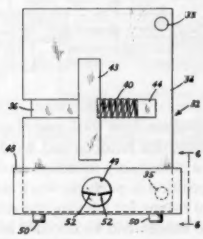
means in said numerical control means for recording the position of said workpiece and toolholder means as indicated by the output of said position feedback means at the instant said probe element makes contact with said workpiece, the recorded positions of said workpiece and toolholder means being a measure of a corresponding dimension of said workpiece.

4,118,872

PUSHER LUG ALIGNING DEVICES

Harold R. Ziegelmeyer, 5010 Griffin Creek Rd., Medford, Oreg. 97501

Filed Aug. 12, 1977, Ser. No. 824,243
Int. Cl.² G01B 5/24
U.S. Cl. 33—181 R **4 Claims**



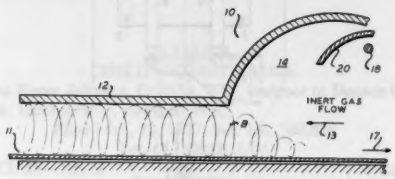
1. A device for use in testing and adjusting the squareness of setting of conveyor carried, work piece pusher members, of a machine designed evenly to slot the ends of work pieces preparatory to end to end finger joining of the slotted work pieces, said device comprising a plate, clamping means carried by the plate for firmly but detachably securing the plate in a fixed predetermined orientation relative to the conveyor, and an indicator device affixed to said plate, said device including forwardly projecting feeler fingers mounted and positioned to be yieldingly engageable with work pusher members of the conveyor, and indicator means responsive to the respective feeler fingers for indicating at a common read-out point the relative positions thereof with respect to a plane perpendicular to the conveyor path whereby it is indicated to the operator whether, and in what manner, the work pusher members on the conveyor must be adjusted forward or backward in order to square the pusher members relative to one another.

4,118,873

METHOD AND APPARATUS FOR INERTING THE ATMOSPHERE ABOVE A MOVING PRODUCT SURFACE

Ronald D. Rothchild, South Orange, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Dec. 13, 1976, Ser. No. 749,951
Int. Cl.² B01K 5/00
U.S. Cl. 34—36 **7 Claims**



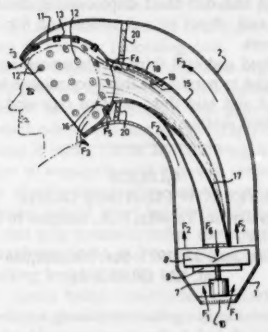
1. A method of inerting the atmosphere adjacent a surface of a product including translating the product into and through a tunnel thereby dragging air into the tunnel in a boundary layer extending away from said surface and introducing an inert gas flow into said tunnel, the improvement comprising introducing said inert gas (1) at a flow rate sufficient to limit the oxygen concentration immediately inside the inlet of said tunnel to less than 20.8% and (2) with a magnitude and direction of momentum sufficient to substantially balance drag forces between said inert gas flow and said translated product and between said inert gas flow and tunnel walls to reduce the loss of inert gas from said tunnel; and establishing a relative velocity between said inert gas flow and said translated product surface sufficient to render said boundary layer essentially turbulent such that atmospheric oxygen dragged into said tunnel by said translated product is rapidly diffused away from said product surface into said boundary layer.

4,118,874

HAIR DRYER, ESPECIALLY FOR LONG HAIR

Bruno Morane, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 15, 1976, Ser. No. 677,403
Claims priority, application France, Apr. 17, 1975, 75 11986
Int. Cl.² A45D 20/24
U.S. Cl. 34—101 **9 Claims**



1. In an improved hair dryer especially adapted to dry long hair, which dryer comprises an elongated first duct, a fan at one end of said duct for blowing air through said duct, said fan

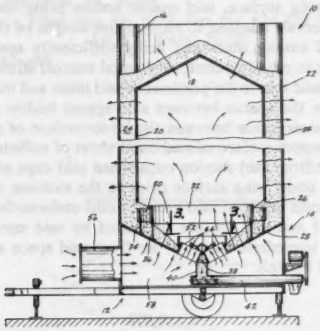
having a suction zone, and an elongated second duct terminating at one end in alignment with the suction zone of said fan, and at its other end near the other end of said first duct, the improvement according to which said second duct is positioned inside said first duct, means closing the end of said first duct remote from said fan and comprising a hood perforated by a plurality of orifices, the end of said second duct remote from said fan opening into said hood, said second duct being of a length sufficient and communicating with said hood through an opening large enough to accommodate fully extended long hair of the user introduced into said second duct, while said dryer is in place on the head of said user, grille means within said second duct comprising a grille extending the length of and obliquely across said second duct for supporting said fully extended long hair in said second duct, said fan comprising means for flowing drying air through said second duct and grille only in a direction toward said fan, means for supporting said dryer with said fan below said hood during use of the dryer, and resistance heating means in said second duct near said hood for heating air drawn from said hood into said second duct.

4,118,875

METHOD AND MEANS OF DRYING PARTICULATE MATERIAL

Vernon H. Sietmann, Laurel, Iowa 50141, and Kenneth V. Rohrs, 1154 Clarmar, Fremont, Nebr. 68025

Filed Feb. 3, 1977, Ser. No. 765,264
Int. Cl.[2] F26B *17/12*
U.S. Cl. 34—174 **10 Claims**



1. A grain dryer comprising,

a cylindrical housing having upper and lower ends, said housing having a perforated wall portion intermediate its upper and lower ends,

a perforated cylindrical wall means positioned within said housing and being spaced therefrom to define a first grain passageway therebetween, said cylindrical wall means having a conical-shaped perforated upper floor extending over its upper end,

a perforated, inverted conical-shaped lower floor in said housing above the lower end thereof, said lower floor extending inwardly from said cylindrical housing, said lower floor having a grain discharge opening formed at its center,

an air blower means in communication with the interior of said housing below said lower floor for supplying heated air thereto,

a grain conveyor means in communication with the interior of said housing below the center of said lower floor for conveying grain from said grain discharge opening outwardly from said housing,

a plurality of upstanding air passageway members positioned around said grain discharge opening and having open upper and lower ends, said lower ends of said air passageway members being in communication with the housing area below said lower floor, the upper ends of said air passageway members being in operative communication with the lower central area of said cylindrical wall means,

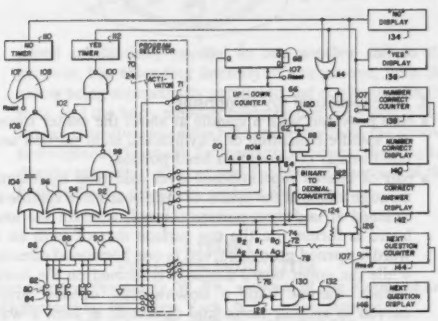
the lower end of said cylindrical wall means being spaced above said lower floor to permit grain to flow from the lower end of said first grain passageway onto said lower floor whereby a portion of the heated air will be forced upwardly through the grain on said lower floor and whereby a portion of the heated air will pass upwardly through said air passageway members and thence outwardly through the grain in said first grain passageway and the grain on said upper floor.

4,118,876

PROGRAMMABLE QUESTION AND ANSWER DEVICE

Antony A. Brilakis, 300 Franklin St., Haworth, N.J. 07641

Filed Oct. 4, 1976, Ser. No. 729,591
Int. Cl.[2] G09B *7/06*
U.S. Cl. 35—9 A **6 Claims**



1. A programmable question and answer device having combined testing and teaching modes with multiple answer set programs, said device comprising in combination:

a housing;

a plurality of indexed answer keys mounted on said housing;

control logic means connected to said answer keys, said control logic means having parallel address means;

non-volatile read out memory means electrically connected to said control logic means, said memory means having a plurality of stored binary words output in parallel by said parallel address means;

program selector means selectively connected to said read only memory means, said control logic means and said answer keys in order to program an operational sequence for a selected answer set; and,

a plurality of electrically activated display means selectively connected to said control logic means for indicating question and answer data;

said control logic means comprises, sequencing logic means connected to said display means and said read only memory means for advancing binary data during an answer program sequence, comparison logic means connected to said program selector means to check validity of permissible answers and student answers in each answer set and display timing means connected to said comparison logic means and said display means to limit viewing time of displays showing correctness of a student's answer;

said sequencing logic means comprises, a first binary counter connected to said display means for accumulating the number of correctly answered questions for each answer set, a second binary counter connected to said display means to indicate the number of the next question within an answer set, and a third binary counter connected by parallel lines to said read only memory means for address-

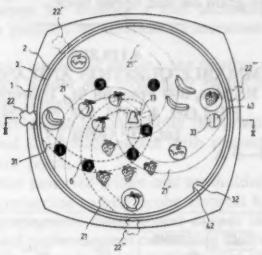
ing said read only means in order to output a selected binary word.

4,118,877

EDUCATIONAL TOY

Hsing Ching Liu, and Lan-dih Liu, both of 3F, No. 213, Chung Ching N. Rd., Sec. 4, Taipei, Taiwan

Filed Jun. 2, 1977, Ser. No. 802,949
Int. Cl.[2] G09B *3/00*
U.S. Cl. 35—9 R **9 Claims**



1. An educational toy comprising:

a base provided with a spindle at about the center thereof, the spindle consisting of a cylindrical stem portion and a non-circular cross-section head portion;

a pair of boards superimposed over said base by inserting through a hole at the center of each board said spindle and retained at said stem portion thereof, wherein the lower board is formed on the top surface thereof with an upwardly opened groove curved in one horizontal direction, while the upper board similarly is formed on the bottom surface thereof with a downwardly opened groove curved in another horizontal direction, in such a way a crossover is formed by said two grooves, and a magnet free-movably buried in said crossover;

a series of replaceable quiz-and-answer plates selectively mountable over said upper board, each plate being provided with a corresponding non-circular cross-section hole at the center thereof for snapping on said head portion of said spindle, the plate having well designed representation thereon for selecting answers to reach the educational purposes; and

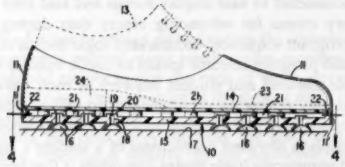
a movable indicator displaceable over said plate and containing a magnet, thereby utilizing the attraction between said magnet and the magnet buried inside said crossover to indicate whether the answer selected is correct or wrong.

4,118,878

ARTICLE OF FOOTWEAR

William P. Semon, 27 Norgate Rd., Glen Head, N.Y. 11545

Filed Sep. 27, 1977, Ser. No. 836,952
Int. Cl.[2] A43B *23/28*
U.S. Cl. 36—59 C **10 Claims**



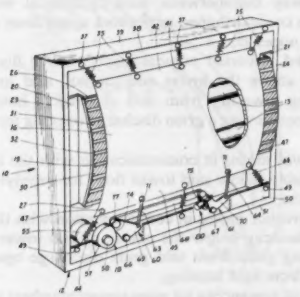
1. In an article of footwear that comprises a sole and readily engageable and disengageable holding means for holding said sole underneath the sole of a human foot or of a shoe worn on the foot of a human, said sole presenting a plurality of suction cups depending from the bottom of said sole for improving the non-slip traction of said sole with respect to a surface against which said suction cups may be pressed, the improvement in that said sole of said footwear comprises an outer sheet of flexible elastic material, a plurality of flexible resilient suction cups secured to said sheet with said cups depending from the undersurface of said sheet, each of said cups comprising a neck that extends through said outer sheet so as to protrude substantially above the upper surface of said outer sheet and has a hollow passage extending therethrough, an inner sheet of flexible elastic material above said outer sheet, a plurality of spacer bodies which normally maintain the undersurface of said inner sheet in secured spaced relation with respect to the upper surface of said outer sheet and with the surfaces of said necks presented at their upper extremities in proximate opposed spaced relation to areas of the undersurface of said inner sheet that are in opposed relation to said necks, said spacer bodies being sufficiently compressible to permit bringing said areas of the undersurface of said inner sheet into pressure contact with said surfaces presented by said necks when said bodies are subjected to pressure imposed by the wearer of the footwear and likewise being sufficiently resilient in relation to the resistance to flexure of said sheets to cause said areas of said undersurface presented by said inner sheet to become separated from said surfaces presented by said necks when said pressure is relieved, said surfaces presented by said necks and said areas of the undersurface of the inner sheet being effective to form a substantially airtight seal therebetween when brought into pressure contact relation by the wearer of the footwear imposing pressure on the upper surface of said inner sheet as he brings said suction cups into pressure contact with an underlying surface, said spacer bodies being localized at spaced intervals adapted to receive the weight of the wearer distributed among them and being sufficiently spaced from each other to readily permit substantial manual stretching and flexure of said sole in the portions of said inner and outer sheets that bridge the spaces between said spacer bodies and so to provide an air space between the undersurface of said inner sheet and upper surface of said outer sheet of sufficient size to receive air from said suction cups when said cups are pressed against an underlying surface prior to the moment when said seal is formed between said areas of said undersurface of said inner sheet and said surface presented by said necks and to permit an immediate inrush of air from said space as soon as said seal is broken.

4,118,879

ANIMATED DISPLAY DEVICE HAVING A CURVED PLATEN AND A MOVABLE FILM

Virgil S. Simon, Glenview, Ill., assignor to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Filed Feb. 10, 1977, Ser. No. 767,492
Int. Cl.[2] G09F *13/34, 19/14*
U.S. Cl. 40—437 **7 Claims**



1. In an illuminated animated display having a housing, illuminating means within said housing for projecting substan-

tially uniformly diffused light forwardly toward a viewer, a rigid platen between the illuminating means and the viewer, the platen having sections of transparent and opaque character with light from the illuminating means passing through the transparent sections of the platen, a flexible sheet of film having translucent images thereon with only those portions of the images which register with the transparent sections of the platen being illuminated and projected, and tensioning means acting at opposite edges of the film for tensioning it over and in full surface contact with the platen, means for shifting the film and the platen relative to one another, comprising;

a motor;

a single cam rotatively driven by the motor;

similar cranks pivotally mounted in spaced relation adjacent one of said opposite edges of the film;

a link member connecting corresponding portions of said cranks for parallel movement of the cranks;

drive links connecting corresponding portions of said cranks to said one of said opposite edges of the film; and

a cam follower on one of said cranks and riding on said cam whereby rotation of said cam pivots said cranks to effect reciprocation of the film thereby extending and relaxing the tensioning means at the other of said opposite edges of the film so as to vary the alignment of the film images with the transparent and opaque sections and intermittently change the projected visual image.

4,118,880

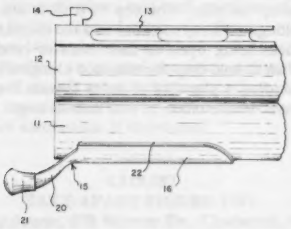
MUZZLE REST

Charles K. Vickers, and Patricia A. Vickers, both of 605 Clare Dr., Washington, Pa. 15301

Filed Aug. 15, 1977, Ser. No. 824,274

Int. Cl.[2] F41C *29/00*

U.S. Cl. 42—94 **4 Claims**



1. A muzzle rest adapted to be attached to a gun barrel so as to support the muzzle above ground when the gun is positioned vertically with barrel down, comprising an elongated mounting plate curved transversely so as to conform to the gun barrel, a foot projecting therefrom at one end, and offset therefrom, and means affixed to the concave surface of the mounting plate for attaching the mounting plate to a gun barrel.

4,118,881

METHOD AND APPARATUS FOR THREADING WORMS ON FISHHOOKS

Douglas A. McFarlane, 140 S. Dolliver-#121, Pismo Beach, Calif. 93449

Filed Mar. 7, 1977, Ser. No. 775,059

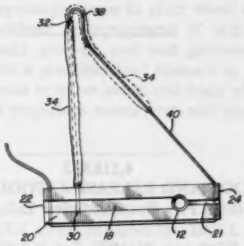
Int. Cl.[2] A01K *97/00*

U.S. Cl. 43—4 **7 Claims**

1. Apparatus for threading worms on fishhooks, comprising, in combination:

(a) a body member provided with a through hole arranged for receiving a worm, and also provided with a recess; and

(b) a longitudinally extending element selectively insertable into the worm received in the hole provided in the body member, and removably insertable into the recess provided in the body member, the body member having a longitudinal extent, the body member being further provided with a groove extending along the longitudinal extent of the body member for receiving the worm during insertion of the longitudinally extending element into the worm, with the hole communicating with the groove, the body member having longitudinally spaced end surfaces, with the body member still further provided at the longitudinally spaced end surfaces thereof with slots arranged for receiving a length of fishing line, the slots being disposed substantially parallel to one another and to the grooves, but extending laterally of the groove, with the recess being substantially parallel to and coplanar with the slots, and the body member being further provided with a trough extending from the hole and away from the groove and coplanar therewith for matingly receiving the longitudinally extending element and facilitating insertion of the longitudinally extending element into the worm.



4,118,882

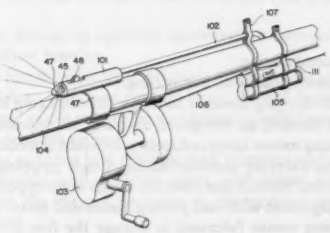
FISH BITE INDICATOR

Peter Gorsky, Prosperity, W. Va., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 19, 1977, Ser. No. 788,744

Int. Cl.[2] A01K *97/12*

U.S. Cl. 43—17 **3 Claims**



1. An assembly attachable to a fishing rod for indicating the pull of a fish, caught on the fishing line of the rod comprising,

a clamp unit fitted with straps for attachment to a fishing rod, said clamp unit formed of a clamp pin slidably mounted in the bore of an inner hollow member which said inner hollow member is mounted in the bore of an outer hollow member with

first spring means to bias the pin in the forward direction relative to the said inner member, and

second spring means to bias the said inner member in the rearward direction relative to the said outer member, with

a first set of openings located in the sides of both members and a second set of openings located within the forward walls of both members of a size to permit a fishing line to pass through the interior of the inner member from said first set of openings and to exit through the said second set of opening between the forward end of the clamp pin and the opening in the forward wall of the inner member, together with

signal indicating means fixed to said inner member located to indicate when said inner member is pulled forward relative to said outer member against the bias of said second spring means.

4,118,883

FISHHOOK AND RELEASING TOOL THEREFOR

Bernard Watkins, P.O. Box 223, Culver Lake, Branchville, N.J. 07826

Filed Aug. 24, 1977, Ser. No. 827,362
Int. Cl.[2] A01K *97/00*
U.S. Cl. 43—43.16 **10 Claims**

1. In combination,
a releasable fishhook comprising:
a hook-carrying member having a fish-engaging hook at one end thereof, an elongated shank at its opposite end and joining means intermediately positioned therebetween and a line-carrying member having finger gripping means at one end thereof and fulcrum means at its opposite end for engagement with said joining means and about which said joining means fulcrums to engage the free movement of said hook-carrying member relative to said line-carrying member; and
a fishhook extracting handle to function as a lever so as to provide a mechanical advantage, said handle having means thereon for engaging said shank to enable the use of said handle to manipulate said hook-carrying member through an arcuate traverse at said joining means to release a fish from engagement with said hook, whereby during said manipulation said finger-gripping means is held to maintain said line-carrying member in a relatively vertical position.

4,118,884

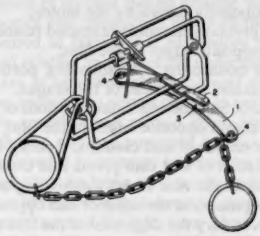
Patent Not Issued For This Number

4,118,885

ANIMAL TRAP HOLDER

Ray L. Carter, Star Rt. C Box 293, Palmer, Ak. 99645

Filed Mar. 7, 1977, Ser. No. 775,370
Int. Cl.[2] A01M *23/28*
U.S. Cl. 43—97 **1 Claim**



1. An animal trap holder for a trap including plural jaw members and a securing chain comprising: an elongated strap member having at a central portion thereof a raised portion forming two shorter strap members in a plane parallel to the elongated strap member whereby two slots are formed between the elongated strap member and the shorter strap members, said slots being open at their ends to receive the jaw members of an animal trap therein, said elongated strap member also including a plurality of holes therein for application and attachment to the chain of said animal trap.

4,118,886

TOY ELEVATOR SAFETY OVERRIDE DRIVE MECHANISM

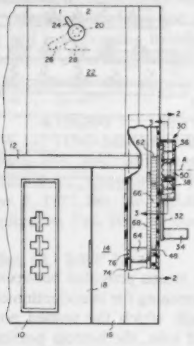
George O. Bartoo, West Falls, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 1, 1977, Ser. No. 764,568
Int. Cl.[2] A63H *33/30*
U.S. Cl. 46—1 R **2 Claims**

1. A toy elevator safety override drive mechanism for preventing damage to the drive mechanism comprising:
first means including a rotatable drive member having a first axis and a drive surface having end portions lying in a first plane substantially perpendicular to a radius of said drive member extending through a midpoint of said drive surface, said midpoint being radially spaced a first distance from said first axis, and said end portions being radially

spaced a second distance greater than said first distance from said first axis;

second means including a rotatable member driven by said drive member and coupled to an elevator mechanism, said driven member having a second axis coincident with said first axis and comprising a resilient flexible loop having a resilient leaf spring portion which in its normal unflexed condition lies in a second plane substantially perpendicular to a radius of said driven member extending through a center of said leaf spring portion, said center being radially spaced from said second axis a distance substantially



equal to said first distance whereupon said drive surface when arranged contiguous to said leaf spring portion is substantially parallel thereto and engages and drives said leaf spring portion and elevator mechanism upon rotation of said drive member, said end portions of said drive member further adapted when said elevator mechanism is jammed or blocked to flex said leaf spring portion radially outwardly from its normal condition a distance substantially equal to said second distance to allow said end portions to override said driven surface whereby damage to said drive mechanism is prevented.

4,118,887

TAKE-APART FIGURE TOY

Donald T. Appleman, 878 Wismar Dr., Cincinnati, Ohio 45230

Filed Dec. 3, 1976, Ser. No. 747,200

Int. Cl.[2] A63H *33/04*

U.S. Cl. 46—22 **13 Claims**

1. A toy comprising:

a universal body having two opposite flat sides terminating in a thin portion adjacent an edge of said body,

an elonated groove on each of said sides, said grooves uniformly spaced from said edge,

appendage means for connection to said body, said appendage means having a thin portion adjacent an edge of said appendage means, said latter thin portion having a body receiving slot therein extending inwardly from an edge of said appendage means and including projection means extending into said slot from said side thereof to engage said grooves when said body is received in said slot,

said projection means disposed adjacent the outer end of said slot and engging in respective ones of said grooves on each side of said body when said body is received in said slot,

said slot having a length longer than the distance between the grooves and the body edge wherein the connection between said body and appendage means is such as to permit said appendage means to pivot about said projection means without disengagement of said projection means from said grooves, and said grooves extending along said sides a predetermined distance to permit said appendage means to move along said body edge without removing said projection means from said grooves.

4,118,888

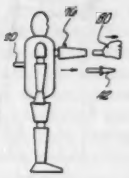
ARTICULATED MAGNETIC DOLL

Iwakichi Ogawa, Chiba, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1976, Ser. No. 725,941

Int. Cl.[2] A63H *33/26, 13/16*

U.S. Cl. 46—22 **16 Claims**



1. An articulated toy having removable appendages comprising;

a hollow housing having at least front and rear shell members;

a magnet having an aperture operatively positioned within the hollow housing;

a pair of armature plates operatively connected to said magnet, at least one joint portion being formed between the armature plates to receive a complimentarily shaped joint on an appendage; and

means for securing said housing shell members and aligning said magnet and armature plate, said means extending through the magnet aperture to interconnect said shell members.

12. The invention of claim 11 wherein the second means for discharging projectile includes a spring loaded removable appendage simulating an arm.

4,118,889

WEARABLE SEEDLING CONTAINER

Stewart Lamlee, 55 W. 86th St., New York, N.Y. 10024

Filed Oct. 15, 1976, Ser. No. 732,983

Int. Cl.[2] A01G *9/02*

U.S. Cl. 47—14 **2 Claims**

1. A seedling sprouter comprising in combination:

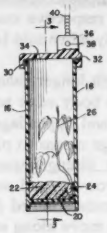
a generally elongated body of transparent material having one curved side, one flat side, a bottom, and an open top;

a removable cap means for substantially closing said open top, said cap having a curved side and a flat side;

means on said cap for suspending said cap;

moisture holding material within said body; and

means on said cap for the snap fit engagement of said cap and said body, whereby said cap and body may both be suspended by said suspension means and worn as an article of jewelry.

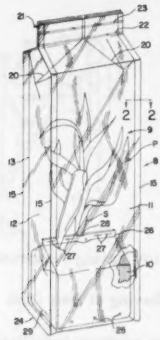


4,118,890

PLANT PACKAGE

William S. Shore, 28126 Gates Mills, Pepper Pike, Ohio 44124

Filed Feb. 16, 1977, Ser. No. 768,976
Int. Cl.[2] A01G *9/02*; A47G *7/08*
U.S. Cl. 47—28 R **23 Claims**



1. A packaged plant unit for containing a live plant having roots and a stem which comprises:

soil supporting the plant roots;

a soil receptacle means containing the soil and the plant roots, said receptacle means being closed around the plant stem to retain soil therein and having means for transmitting moisture through the receptacle means to the soil and plant roots; and

a container enclosing the entire plant, soil, and receptacle means, said container being light-transmissive, flexible, inflated, and hermetically sealed, the container having generally rectangular side panels connected by upright supporting seams, the material of the container containing therein a surfactant for the prevention of large water droplet formation.

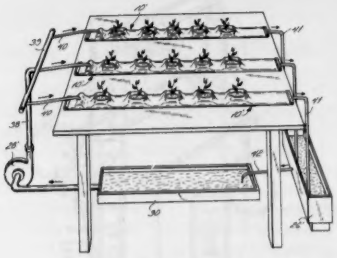
4,118,891

SYSTEM FOR GROWING PLANTS

Donald K. Kehl, 2915 Kings Dr., and Eugene A. Crist, 2338 Pretty Bayou Island Dr., both of Panama City, Fla. 32401

Continuation-in-part of Ser. No. 618,816, Oct. 2, 1975. This application Sep. 28, 1976, Ser. No. 727,577
Int. Cl.[2] A01G *31/00*
U.S. Cl. 47—59 **12 Claims**

1. A conduit for use with a recirculating water-nutrient solution plant supply system of a type for growing a plurality of plants with respective roots of each plant supported in a respective plant medium located in a conduit, said conduit placed on a sloped surface so that gravity carries the water-nutrient solution to the plants in the conduit from one end to the other and a pump to recirculate the unused water-nutrient solution to the upper end of the conduit, the conduit comprising a continuous plant tube constituted of a thin, pliant plastic foil, the tube having the property of collapsing when empty, slotted openings formed in the top of the tube, said slotted openings being formed at intervals in said tube, each of said slotted openings being of a size sufficient to receive said plant medium, said tube portion forming said slotted openings being spread apart to open said slotted openings permitting said plant medium to be inserted in said tube, said tube comprising said



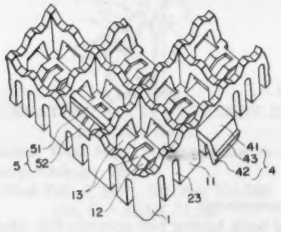
upper end with means provided between said upper end and the first slotted opening for introduction of said solution and an open end through which the unused portion of the solution drains from said tube, the bottom portion of said tube being closed between said ends to comprise a continuous impervious channel unobstructed except by said plant medium for said water-nutrient solution to flow between said ends with all of said unused solution leaving said tube exiting at said open end, said plants being in fluid communication with each other, the tube generally conforming to the shape defined by said plant and plant medium by draping on said medium to form said channel.

4,118,892

CONNECTABLE NURSERY BOX STRUCTURES HAVING COMPARTMENTALIZING GRIDS

Tsugio Nakamura, Funabashi; Seigo Aizaki, Koshigaya, and Kosei Hayashi, Hitachi, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka and Kabushiki Kaisha Hayashi Zoen, Hitachi, both of, Japan

Filed Feb. 4, 1977, Ser. No. 765,479
Claims priority, application Japan, Feb. 6, 1976, 51-13531[U]; May 28, 1976, 51-69141[U]; Aug. 20, 1976, 51-112377[U]
Int. Cl.[2] A01G *9/02, 9/12*
U.S. Cl. 47—66 **7 Claims**



1. A plant nursery box for permanently planting lawn grasses or the like and for protecting the plants from trampling due to people walking thereon comprising a base housing defined by four side walls and an apertured bottom plate, said apertured bottom plate having a wavy configuration, said sidewalls having interlocking means for selectively securing

together a plurality of said nursery boxes, a grid member integrally formed with said base housing, said grid member comprising a plurality of intersecting wall members disposed within the base housing and defining a plurality of rectangular compartments therein with the maximum wave height of said bottom plate being midway between two of the parallel walls defining a compartment, each of said wall members defining each compartment having at least one elongated, vertical slot in the bottom edge thereof and notches in the upper edge thereof at each compartment site, whereby plant root structures below the soil and plant growth above the soil in each compartment may communicate between adjacent compartments, said compartments being sufficiently small to prevent a person's foot from entering thereinto and said integrally formed grid member and base housing having sufficient mechanical strength to support a person's weight.

4,118,893

WINDOW LIFTING MECHANISM

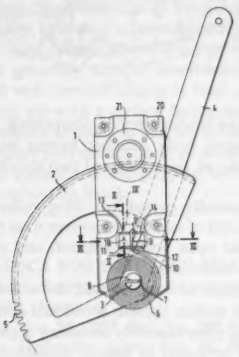
Herbert Becker, Coburg, Fed. Rep. of Germany, assignor to Metallwerk Max Brose & Co., Coburg, Fed. Rep. of Germany

Filed Apr. 1, 1977, Ser. No. 783,664

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1976, 7613594[U]

Int. Cl.² E05F *11/44*

U.S. Cl. 49—348 **8 Claims**



1. A window lifting mechanism for a window comprising:

(a) a support including a carrier member;

(b) an operating member mounted on said support for angular movement about an axis,

(1) one of said members essentially consisting of a unitary piece of material having a face transverse to said axis,

(2) two pairs of integral lug portions of said piece being angularly offset from said face, the lug portions of each pair defining a gap therebetween;

(c) an elongated spiral spring having two longitudinal end portions and an intermediate portion connecting said end portions and extending about said axis,

(1) one of said end portions having two longitudinally spaced parts respectively secured in said gaps in abutting engagement with the lug portions defining the respective gaps;

(2) said spring being formed with two bends,

(3) each of said bends being contiguously adjacent an associated one of said gaps and longitudinally offset from the associated gap in a direction away from the other gap; and

(d) fastening means fastening the other end portion of said spring to the other one of said members in a position for biasing said operating member to move angularly about said axis under the resiliency of said spring.

4,118,894

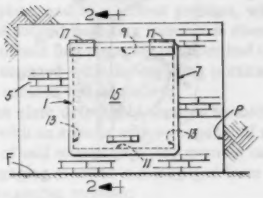
DOOR FRAME AND DOOR ASSEMBLY FOR A MINE STOPPING

John M. Kennedy, and William R. Kennedy, both of P.O. Box 38, Taylorville, Ill. 62568

Filed May 27, 1977, Ser. No. 798,770

Int. Cl.² E05D *7/00*

U.S. Cl. 49—402 **7 Claims**



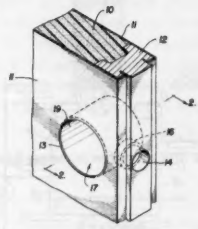
1. A door frame and door assembly for installation in a man-door opening in a mine stopping, said assembly comprising a rectangular frame having a top, bottom and sides and a door hinged to the top of the frame and adapted to swing down for closing and to swing up for opening, the frame being adapted to be mounted in a man-door opening in a mine stopping with the bottom of the frame bearing on the stopping at the bottom of the man-door opening, the sides of the frame extending up at opposite sides of the man-door opening and the top of the frame forming a lintel at the top of the man-door opening, the top, bottom and sides of the frame each having a face engageable by the door when the door swings down, each said face constituting a forward face, the bottom of the frame extending forward beyond the vertical plane of the forward face of the top of the frame so that the forward face of the bottom is forward of the forward face of the top, the sides also extending forward beyond the vertical plane of the forward face of the top of the frame and the forward faces of the sides being inclined outwardly in downward direction from the ends of the forward face of the top of the frame to the ends of the forward face of the bottom of the frame, the door having sealing surfaces at the top, bottom and sides thereof engageable in face-to-face relation with the said forward faces of the top, bottom and sides of the frame when the door swings down to seal the opening in the frame, gravity and air pressure on the forward face of the door being adapted to hold the door closed with its said sealing surfaces in face-to-face engagement with said forward faces of the frame, the top of the frame having an upwardly extending forward flange, the bottom having a downwardly extending forward flange, and the sides having laterally outwardly extending forward flanges which are inclined forward in downward direction from the ends of the forward flange of the top to the ends of the forward flange of the bottom, the forward faces of said top, bottom and sides being constituted by the forward faces of the said forward flanges of said top, bottom and sides, the said sealing surfaces of the door being engageable generally flatwise in face-to-face engagement with the forward faces of said forward flanges so that the sealing surfaces may slide relative to said forward faces on distortion of the frame out of rectangular shape, e.g., to distort to a non-rectangular parallelogrammatic shape, to avoid jamming of the door, the door being free of any engagement around the outer edges of the said forward flanges so that the sealing surfaces may slide relative to the said forward faces.

4,118,895

LINER FOR INTERSECTING CROSS BORE AND EDGE BORE OF FOAM-FILLED METAL SKINNED DOOR

Bernard C. Governale, Duluth, Ga., assignor to Peachtree Doors, Inc., Norcross, Ga.

Filed Dec. 23, 1977, Ser. No. 863,909
Int. Cl.[2] E06B 3/00
U.S. Cl. 49—503 7 Claims



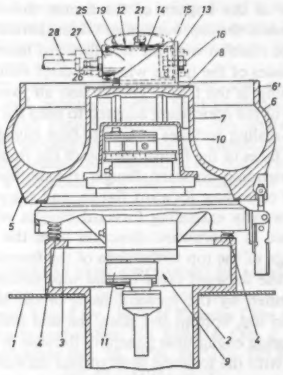
1. In a foam-filled door having opposite side metal skins and a swinging edge stile connected with the skins, said skins having axially aligned cross bore openings spaced a precise distance from the outer edge face of said stile and said stile having an edge bore intersecting the common axis of said cross bore openings at right angles, a one-piece liner and dam having a relatively large diameter cross bore sleeve portion mounted between said skins with its bore in registration with said cross bore openings of the skins and having a smaller diameter edge bore sleeve projecting radially of the cross bore sleeve portion and engaged snugly within the edge bore of the stile, the opposite end faces of the cross bore sleeve portion of said liner engaging the interior faces of said metal skins, the installed liner blocking the passage of foam into said cross bore and edge bore.

4,118,896

APPARATUS FOR SURFACE TREATMENT OF PARTS WITH A VIBRATORY CONTAINER

Carl Kurt Walther, Wuppertal; Henning D. Walther, Haan; Hubert P. Hagelueken, Dusseldorf, and Karl Temme, Wuppertal, all of Fed. Rep. of Germany, assignors to Wheelabrator-Frye Inc., Hampton, N.H.

Filed Mar. 18, 1976, Ser. No. 668,134
Int. Cl.[2] B24B 31/06
U.S. Cl. 51—163.2 5 Claims



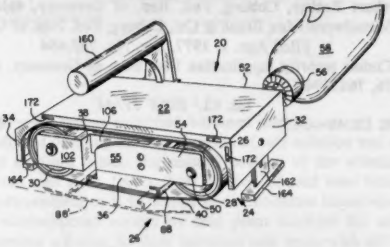
1. An apparatus for the surface treatment of parts with media comprising a horizontally disposed annular vessel in which said parts and media are received, means resiliently mounting said annular vessel for multi-directional movement, eccentric means connected to the annular vessel for imparting basic vibrations to said annular vessel comprising one or more eccentrics mounted for rotational movement about the vertical axis of the annular vessel, and a supplementary vibration generator means mounted on the annular vessel separate and apart from but in axial alignment with the eccentric means for inducing vibrations independently of the basic vibrations, and means for angular adjustment of said supplmentary vibration generator means for varying the plane of vibration between the horizontal to the vertical of the container.

4,118,897

BELT-TYPE SANDER ACCESSORY

Ronald Martin, 5225 SW. Lakeview Blvd., Lake Oswego, Oreg. 97034

Continuation-in-part of Ser. No. 634,192, Nov. 21, 1975, Pat. No. 3,983,664. This application Sep. 13, 1976, Ser. No. 722,537
Int. Cl.[2] B24B 23/06
U.S. Cl. 51—170 EB 6 Claims



1. A belt-type sanding device comprising:

(a) an elongate body member having an open bottom, a closed side, an open side and two longitudinally opposed ends;

(b) a substantially cylindrical drive roller mounted proximate one end of said body member so as to extend laterally across said open bottom thereof, said drive roller being rotatable on its axis;

(c) drive means coupled to said drive roller for imparting rotational motion thereto about said axis;

(d) a bearing plate assembly including upper and lower plate members arranged in spaced substantially parallel relationship to one another and attached to said closed side of said body member extending across said open bottom thereof toward said open side, said lower plate member including a substantially planar bearing surface directed outwardly from said open bottom of said body member;

(e) a yoke member having an elongate shank portion having first and second sections extending longitudinally in said body member, said shank portion including means for coupling said yoke member to said upper plate member and for preventing substantial vertical displacement of said yoke member relative to said bearing plate assembly including engaging means associated with each of said first and second sections for engaging said upper plate member of said bearing plate assembly and bias means connected between each of said sections and said plate assembly for maintaining said sections intercoupled;

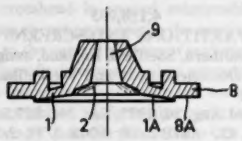
(f) a substantially cylindrical idler roller mounted on said yoke assembly proximate the other end of said body member so as to extend laterally across said open bottom thereof, said idler roller being rotatable about its axis; and

(g) said drive roller, bearing plate assembly and idler roller being oriented in said body member such that an endless belt of sandpaper may be looped therearound with a portion of said belt in contact with said bearing surface and such that rotation of said drive roller causes movement of said belt across said surface.

4,118,898
MOUNTING BLOCK FOR MOUNTING A LENS IN A LENS TRIMMING AND BEVELLING MACHINE

Jean Marie Godot, Brunoy, France, assignor to Essilor International, Joinville Le Pont, France

Filed May 11, 1977, Ser. No. 796,006
Claims priority, application France, May 18, 1976, 76 14905
Int. Cl.[2] B24B *41/06*
U.S. Cl. 51—216 LP **4 Claims**

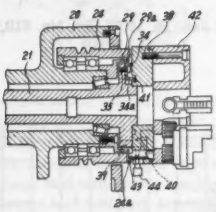


1. A mounting block for mounting an optical lens on one end of the spindle of a trimming and bevelling machine, said block being made of a flexible plastic material and adaped to be fixed only to one of the major surfaces of said lens by means of a thin film of adhesive material, said block comprising orienting and driving means adapted to cooperate with complementary means provided on said spindle, said block further comprising a flexible circular web portion defining a lens holding surface of generally conical shape, coated with a layer of said adhesive material and adapted to engage a central portion of one major surface of said lens, a central recess being provided adjacent the apex of said generally conical lens-holding surface, the periphery of said web portion having at least one outwardly extending gripping tab with a surface facing said lens surface and offset with respect to said lens holding surface of said web portion by a shoulder part of said bock, so as to define a space between said lens surface and said gripping tab when said lens is affixed to said mounting block.

4,118,899
HEAD STOCK FOR GRINDING MACHINE

Akiyoshi Kobayashi, Kariya, Japan, assignor to Toyoda-Koki Kabushiki-Kaisha, Japan

Filed May 10, 1977, Ser. No. 795,448
Claims priority, application Japan, Jun. 10, 1976, 51-68154
Int. Cl.[2] B24B *41/04*
U.S. Cl. 51—237 R **5 Claims**

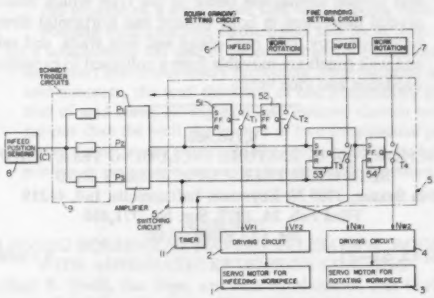


1. A head stock for a grinding machine comprising:
a housing;
a spindle rotatably mounted within said housing and provided at one end thereof with a radially recessed groove;
a pulley rotatably mounted on said housing in coaxial relation with said spindle and provided at one end thereof with an engaging recess;
a first engaging member secured at one end thereof to said housing between said pulley and said spindle, and provided at the other end thereof with a notch;
a second engaging member slidably received in the groove of said spindle and being engageable at one end thereof with the notch of said first engaging member;
the other end of said second engaging member being projected beyond said spindle;
a first face plate detachably secured to said pulley and provided with an annular groove and an engaging portion engageable with the other end of said second engaging member;
means for selectively positioning said second engaging member at a first position, where the one end of said second engaging member is engaged with the notch of said first engaging member and the other end thereof is disengaged from the engaging portion of said first face plate secured to said pulley and received in the annular groove of said first face plate, and at a second position, where the one end of said second engaging member is disengaged from the notch of said first engaging member and the other end thereof is engaged with the engaging portion of said first face plate secured to said pulley;
a second face plate detachably secured to said spindle and provided with an annular groove capable of receiving the other end of said second engaging member only when the second engaging member is disengaged from the notch of said first engaging member;
an engaging pin slidably received in said second face plate to be engageable with the engaging recess of said pulley;
means connected to said engaging pin for selectively engaging said engaging pin with the engaging recess of said pulley;
a chuck secured to said second face plate; and
said first and second face plates being selectively secured to said pulley and said spindle, respectively.

4,118,900
METHOD FOR CONTROLLING GRINDING PROCESS

Sadao Moritomo; Youji Tatsumi, and Terumitsu Sugita, all of Narashino, Japan, assignors to Seiko Seiki Kabushiki Kaisha, Japan

Filed Mar. 22, 1977, Ser. No. 779,999
Claims priority, application Japan, Mar. 29, 1976, 51-34804; Mar. 29, 1976, 51-34805
Int. Cl.[2] B24B *1/00*
U.S. Cl. 51—281 R **4 Claims**



1. A method for controlling the grinding of a rotating workpiece by a grinding machine having a driven work spindle and a grinding wheel which comprises:
mounting said workpiece on said work spindle and starting the grinding machine,
effecting a rapid infeed of the grinding wheel to the workpiece,
rotating the workpiece and the grinding wheel at first preset speeds while infeeding the grinding wheel to the workpiece at a preset rate per workpiece revolution to effect a predetermined rough grinding of the workpiece, and thereafter
rotating the workpiece and the grinding wheel at second separately preset speeds different from said first present speeds while infeeding the grinding wheel to the work-

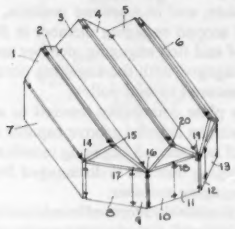
piece at a preset lower rate per workpiece revolution to effect a predetermined fine grinding of the workpiece.

4,118,901

STRUCTURE FOR RELOCATABLE BUILDING WITH FOLDING PLATE ROOF AND FOLDING END WALLS

Delp W. Johnson, 240 Oakview Dr., San Carlos, Calif. 94070

Filed Jul. 1, 1977, Ser. No. 812,161
Int. Cl.[2] E04B *1/344*
U.S. Cl. 52—18 3 Claims



1. A building structure comprising a folding plate roof having:

a. at least four generally trapazoidal plates, each plate being hingedly connected to the plates adjacent thereto in zigzag fashion to provide alternate ridges and valleys at the hinges, and to permit the roof to be expanded and collapsed; and

b. two side walls each having upper and lower edges and lateral ends, said side walls being hingedly connected to a lower edge of one of the outer plates of said roof; and

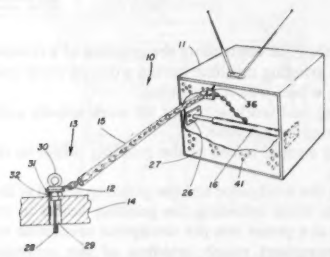
c. two end walls, each of which is hingedly connected to and between the ends of said side walls, said end walls having an even number of panels equal in number to said trapazoidal plates; each of said wall panels being hingedly connected to the wall panel adjacent thereto; and top ends of alternate hinged joints of said end walls having a pivotal point of connection to a valley joint of said folding roof, said pivotal connection being of the type which allows pivotal movement in both vertical and horizontal directions, whereby, said roof plates and side walls, and said end wall panels are movable from a collapsed to expanded condition and vice versa.

4,118,902

ANCHOR FOR FURNITURE INCLUDING TELEVISION SETS WITH TELESCOPIC INSERT ROD

Olivia Saxton, 2709 N. Keystone, Indianapolis, Ind. 46218

Filed Feb. 24, 1977, Ser. No. 771,455
Int. Cl.[2] E05B *73/00*
U.S. Cl. 52—27 9 Claims



1. A retainer for an article of furniture comprising:

an anchor fixedly secured to a portion of a building;

a chain having a first end and a second end with said first end fastened to said anchor;

a rod with opposite ends and having said second end of said chain fixedly fastened thereto intermediate said opposite ends; and,

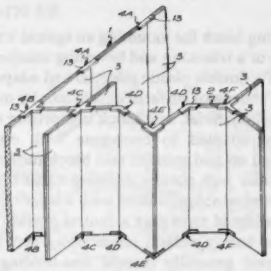
a pair of plates fixedly secured to said article of furniture with said plates fixedly mounted respectively to said opposite ends of said rod.

4,118,903

PARTITIONS AND SCREENS

James Albert Coulthard, Sheffield, England, assignor to Baytzner-Coulthard Dokumentations und Werbefilm GmbH, Sheffield, England

Filed Aug. 24, 1977, Ser. No. 827,360
Int. Cl.[2] A47B *5/00*; E04B *2/74, 2/82*
U.S. Cl. 52—36 22 Claims



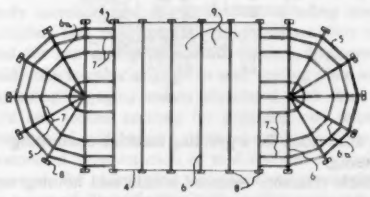
1. An assembly for forming a partition or screen comprising a plurality of panels edged with an attachment material having a multiplicity of loops, and a plurality of connectors comprising channel-section members within the bases of which is provided attachment material having a multiplicity of hooks for engagement with the loops of the attachment material on the edges of the panels, whereby two or more panels can be readily secured together by two or more connectors and as readily disconnected.

4,118,904

BUILDING STRUCTURE

Philip D. Sprung, 1001-10th Ave., SW., Calgary, Alberta, Canada

Filed Jun. 28, 1977, Ser. No. 810,901
Int. Cl.[2] E04B *1/32*
U.S. Cl. 52—63 17 Claims



1. A building structure comprising at least two spaced arch-like frame members provided with fabric capturing means for holding a fabric strip, a fabric strip having a thickened edge retained by said fabric capturing means, said fabric strip extending between spaced arch-like frame members, said arch-like frame members each including a beam structure having a web connected to and extending from a transverse exterior crosshead which extends across one end of said web to form

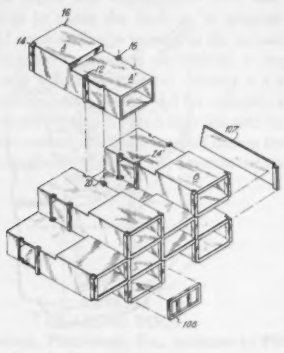
lateral extensions on either side thereof, said exterior crosshead forming a unitary structure with said web and having an outer face remote from said web with an upstanding edge extending substantially parallel to said web adjacent each end of said outer face, said fabric capturing means including an elongate plate formed to provide a pair of upstanding edges spaced for a distance substantially equal to the distance between the upstanding edges on said exterior crosshead and mounting means to removably mount said elongate plate on the outer face of said exterior crosshead in spaced relationship thereto, said mounting means operating to secure the central portion of said elongate plate to the central portion of said crosshead with the upstanding edges of said elongate plate extending downwardly toward and in spaced relationship to the upstanding edges on said exterior crosshead to form therewith constricted gaps sufficient to loosely pass the fabric strip but restricted sufficiently to prevent passage of the thickened edge of said fabric strip, the space between the outer face of said crosshead and said elongate plate being ample to accommodate and permit movement of the thickened edge of said fabric strip.

4,118,905

MODULAR BUILDING CONSTRUCTION SYSTEM

Shelley W. Shelley, P.H. No. 1, Castillo Del-Mar Condominium Isla-Verde, Carolina, P.R. 00913

Filed Jul. 21, 1977, Ser. No. 817,869
Int. Cl.[2] E04H *1/12*
U.S. Cl. 52—79.2 18 Claims



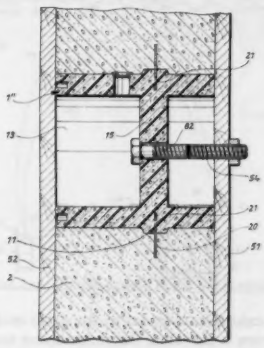
1. A modular construction system for a plural-level building, comprising a plurality of box-like modular units, each having side walls, a roof member including a ceiling, and a floor to form a monolithic module; each said modular unit having a cantilevered portion; said units being stacked to form a building structure wherein said units are arranged in a first row in staggered configuration with alternate units in said first row extending in a frontward direction and remaining units in said first row extending in a rearward direction, the cantilevered portions of said frontward extending units overlapping with the cantilevered portions of said rearward extending units; and wherein said units are arranged in a second row overlying said first row, said units in said second row being in staggered configuration such that alternate units in said second row extend in a frontward direction and remaining units in said second row extend in a rearward direction, one of said units in said second row being supported by a pair of units in said first row, and at least a part of said cantilevered portion of said one unit in said second row being supported at least in part by an adjacent modular unit.

4,118,906

CONCRETE VESSEL HAVING WALL APERTURES LINED WITH TUBULAR INSERTS

Manfred Preuninger, Ilsfeld-Schozach; Gottfried Hollender, Brackenheim, and Herbert Schaber, Heilbronn, all of Fed. Rep. of Germany, assignors to Cillichemie Ernst Vogelmann, Heilbronn, Fed. Rep. of Germany

Filed Feb. 25, 1977, Ser. No. 771,963
Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623388
Int. Cl.[2] E04B *1/40*
U.S. Cl. 52—100 11 Claims



1. A vessel comprising:

(a) a wall of cast concrete formed with an aperture extending therethrough in a predetermined direction;

(b) a tubular insert received in said aperture in sealing, conforming engagement with said concrete,

(1) the length of said insert in said direction being not greater than the corresponding length of said aperture,

(2) said insert essentially consisting of a solid mixture of a particulate, rigid, inorganic material and a more resilient, synthetic organic resin binder,

(3) said insert including means for fastening said insert in the interior of a form while said wall is being built by pouring fluid concrete mixture into said form; and

(c) a substantially flat disc of sheet steel partly embedded in said insert and transversely projecting from the same into said concrete, the wall thickness of one longitudinal portion of said insert having said disc inserted therein being greater than the wall thicknesses of two longitudinal portions of said insert longitudinally juxtaposed to said one portion in respective, opposite, longitudinal directions.

4,118,907

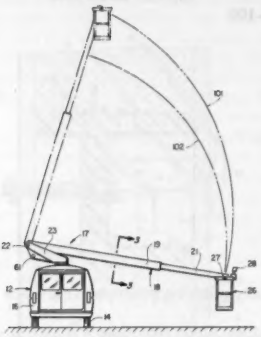
LIFTING EQUIPMENT HAVING TELESCOPIC BOOM WITH AUTOMATIC EXTENSION LIMITING

Robert F. Small, San Jose, and Joel B. Meredith, San Carlos, both of Calif., assignors to General Cable Corporation, San Carlos, Calif.

Filed Oct. 27, 1977, Ser. No. 846,195
Int. Cl.[2] E04H *12/34*
U.S. Cl. 52—115 7 Claims

1. In a mobile lifting equipment, a wheeled vehicle having a frame, a boom structure mounted on the frame for rotation about a vertical axis, raising and lowering about a horizontal axis and extension and retraction with respect to the vehicle, said boom structure including an outer boom and inner boom mounted for telescoping movement in the outer boom, first and second extension cylinder assemblies carried by the outer boom for extending and retracting the inner boom with respect to the outer boom, an elevation cylinder assembly connected to the boom structure, each of the cylinder assemblies including a cylinder, a piston slidably mounted in the cylinder and a

piston rod connected to the piston, each of the cylinders having openings at opposite ends thereof on opposite sides of the piston in the cylinder, means connecting one of the openings of the elevation cylinder to one of the openings of one of the first extension cylinder so that hydraulic fluid can be transferred between the elevation cylinder and the first extension cylinder, a drain tank, sump means connected to the drain tank for supplying hydraulic fluid to the other of the openings of the elevation cylinder for causing movement of the piston in the elevation cylinder, means connecting the other of the openings



of said first extension cylinder to the drain tank so that as the boom structure is elevated, the inner boom section is moved relative to the outer boom section so that the extension of said first extension cylinder assembly is controlled directly by the amount of hydraulic fluid supplied to the elevation cylinder assembly, means connecting the pump means to one of the openings of the second extension cylinder and means connecting the other opening of the second extension assembly to the drain tank so that the inner boom structure can be extended and retracted independent of the action of the elevation cylinder assembly.

4,118,908

SPIRAL STAIRCASE

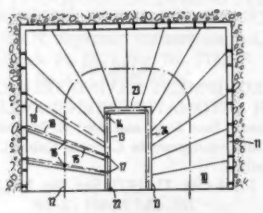
Adolf Bucher, Obere Raumuhle 1, D-7035 Waldenbuch, Germany

Filed Dec. 6, 1976, Ser. No. 747,813

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2555041

Int. Cl.² E04F *11/02, 11/18*

U.S. Cl. 52—185 **6 Claims**



1. In a spiral staircase having at least one spiral section between two consecutive floor levels comprising a plurality of steps each having a leading edge and a rear edge and each being supported at its outer end at a wall adjacent said staircase, a handrail formed of rectangularly related sections, when viewed from above, and including support posts at the upper and lower ends of said staircase for supporting said handrail on the respective floor levels, a plurality of spokes for suspending the inner ends of said steps from said handrail, said spokes being arranged so that there is provided one spoke for each step, and each spoke suspending one step adjacent its leading edge and the next deeper step adjacent its rear edge, the improvement comprising

said plurality of steps being splayed such, that the distance between the midpoints of adjacent leading edges, when viewed from above, being equal along said staircase and that the distances between successive vertical lines connecting one of said leading edges and the center line of said handrail, being substantially equal along said staircase,

said spokes being equally spaced along the staircase,

said handrail between said upper and lower support posts having a constant slope and continuing over the rectangularly connected handrail sections such that the vertical distances between the handrail and the leading edges of said plurality of steps remains equal along said staircase.

4,118,909

SILO DOOR CONSTRUCTION

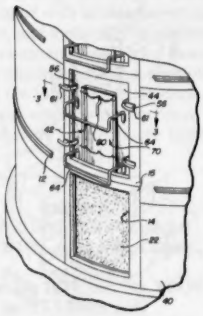
James B. Rutten; Peter T. Rutten, both of Plainfield; Gordon G. Therrien, Oswego, and Richard S. Gaylord, Plainfield, all of Ill., assignors to Railoc Company, Inc., Plainfield, Ill.

Division of Ser. No. 582,135, May 30, 1975, Pat. No. 4,043,465.

This application Feb. 24, 1977, Ser. No. 771,772

Int. Cl.² E04H *7/00*

U.S. Cl. 52—196 **6 Claims**



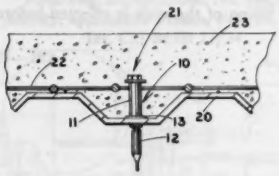
1. A selectively positionable door system adapted for use with silos having a plurality of existing, previously formed, vertically disposed spaced openings in the wall thereof wherein the door system may be employed to overlie and close said openings, while still providing a discharge opening, said system including a plurality of separate frame panels for removable attachment to said silo in overlying relation to the inner edges of the silo wall openings, each said frame panel including a discharge aperture formed therein, bounded by upper, lower and side panel sections which aperture is adapted to be closed by a removable door member; clamping means for affixing each of the frame panels in position relative to the inner edges of said silo wall openings, such that said panels may be placed in superposed relation to each other to provide a substantially continuous inner frame structure, said clamping means comprising a plurality of clamp members carried by said panels and adapted to extend through said existing openings and being engageable with an exterior wall portion of said silo for drawing said frame panels into engagement with an interior silo wall portion of said silo.

4,118,910

ANCHORABLE TUBULAR DEVICE

Thomas McSherry, 404 Terrace Rd., Bayport, N.Y. 11705, and Edward J. Gormley, 63 Guy St., Harrington Park, N.J. 07640

Continuation of Ser. No. 690,213, May 26, 1976, abandoned.
This application Aug. 15, 1977, Ser. No. 824,584
Int. Cl.[2] E04B 1/41
U.S. Cl. 52—699 8 Claims



1. A device for anchoring to a building deck atop which concrete is poured and for providing conduit means for a separate fastener or the like through the concrete and through a bore in the deck and for providing temporary anchorage for the device or for the fastener or the like, while the concrete is poured and hardening, said device comprising a tubular sleeve having resilient legs formed on the bottom end thereof and an annular flange separating said legs from the upper portion of the sleeve, said upper portion of said sleeve extending a substantial distance from said flange to the top end, said device further comprising an elongated actuating member received in the sleeve, said legs of said sleeve being adapted to closely pass through the bore in the deck, said actuating member comprising means, when urged into engagement with said legs, for spreading said legs to cause the deck to be gripped between said legs and said annular flange as long as the actuating member or other elongated member is maintained in engagement with the legs, said actuating member having a top portion constituting means for being driven and for completely passing through said sleeve from said top end through said bottom end thereof, said sleeve constituting the conduit means through the concrete and through the bore for the fastener or the like.

4,118,911

GLAZING TOOL

Richard R. Lewchuk, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 24, 1977, Ser. No. 771,597
Int. Cl.[2] B30B 1/12; E04F 21/00
U.S. Cl. 52—749 3 Claims

1. A tool for installing an add-on pane to an existing glazing, comprising:

a plate member having a first surface and a second opposite surface;

a pin mounted on the second surface of the plate;

a threaded shaft mounted on the second surface of said plate member;

a platform pivotally mounted to an end of said threaded shaft;

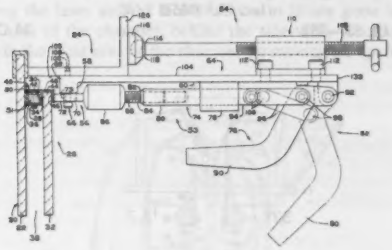
said pin, said threaded shaft and said platform coact to mount said plate member to frame of the existing glazing;

a plunger slideably mounted on the first surface of said plate member;

force dampening means mounted on an end of said plunger;

a rigid elongated member slideably mounted on the first surface of said plate member adjacent a side of said plate member; and

lever means acting on said plunger for urging said plunger toward said elongated member to move said force dampening means into engagement with said rigid elongated member.

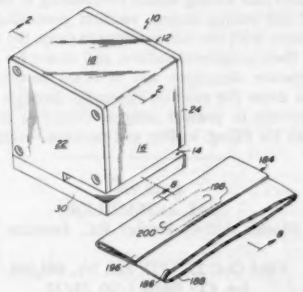


4,118,912

METHOD OF SECURING A COMMODITY IN A PLASTIC BAG

Henry Verbeke, Tannersbrook Rd., Chester, N.J. 07930

Division of Ser. No. 572,363, Apr. 28, 1975, Pat. No. 4,031,815.
This application Feb. 16, 1977, Ser. No. 769,076
Int. Cl.[2] B31B 1/86
U.S. Cl. 53—469 8 Claims

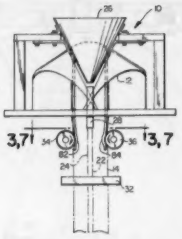


1. A method of packaging a vended commodity in a preformed plastic bag, said plastic bag being formed from a thermoplastic material, said bag comprising a front wall, a rear wall and a closed bottom, comprising placing the vended commodity in said bag, and forming an opening in the top of said bag after said vended commodity has been placed therein, said opening being formed by heat cutting said opening, said heat cutting removing a portion of said front wall and said rear wall, and heat sealing said front wall to said rear wall at said opening.

4,118,913
SHORT PRODUCT DROP VERTICAL FORM, FILL AND SEAL PACKAGING MACHINE

Roger L. Putnam, Jr., East Longmeadow, and Edward F. O'Brien, Northampton, both of Mass., assignors to Package Machinery Company, East Longmeadow, Mass.

Filed Apr. 6, 1977, Ser. No. 785,123
Int. Cl.[2] B65B 9/10
U.S. Cl. 53—551 24 Claims



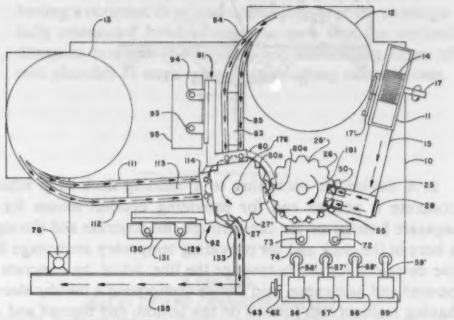
1. In a vertical form, fill and seal packaging machine having a source of flexible packaging material in the form of an elongated thin flat strip comprising successive package blanks as integral contiguous sections thereof, a tube former adapted to receive said strip material and progressively form the same to a depending and upwardly open tubular configuration, opposite longitudinal edge portions of the material being progressively juxtaposed by said former in parallel vertically extending relationship, product dispensing means associated with said former and operable for the gravity discharge of measured quantities of product to the tube interior spaced through its upwardly open end, at least two feed rolls disposed beneath and closely adjacent the former and arranged on spaced horizontal axes and in parallel relationship so as to peripherally engage opposite sides of the tube, each of the rolls having a plurality of small peripheral openings along at least that portion of its length engageable with the tube, and said rolls arranged to engage the tube on opposite sides thereof, each at an area spaced approximately 90° around the tube from its said vertical edges, end sealing means disposed beneath and closely adjacent said feed rolls to provide longitudinally spaced horizontal end seals across the tube, vertically stationary side sealing means of the continuous sealing type between the feed rolls adjacent the tube edges to seal the same in movement therepast, said side sealing means terminating at its lower end above said end sealing means, vacuum generating means in communication with the roll openings to cause the rolls to grip the tube at their peripheral surface, and means for turning the rolls in opposite directions and at equal peripheral speeds whereby to draw the tube downwardly through the former and successively to present integral blanks in tubular form therebeneath for filling, sealing and package formation.

4,118,914
VIAL ASSEMBLER

Walter A. Shields, 181-41 Henley Rd., Jamaica, N.Y., N.Y. 11432

Filed Oct. 25, 1977, Ser. No. 845,006
Int. Cl.[2] B65B 3/00, 23/22
U.S. Cl. 53—282 7 Claims

1. Apparatus for partially filling with a liquid a cylindrical vial having one open end, inserting a plug into the open end and fitting a cap onto the open end, comprising first and second turrets, a plurality of notches provided in the periphery of each of the turrets, the notches each being sized and shaped for receiving a respective one of the vials in an upright orientation with the open end thereof directed upwardly, means for feeding respective vials into respective notches of the first turret so that each vial is received in a respective notch in an upright orientation with the open end thereof directed upwardly, located adjacent said first turret a filling station for partially filling vials in notches of the first turret with a liquid, means for rotationally indexing the turrets in opposite directions, the turrets abutting each other thereby defining a zone of closest mutual proximity of the turrets to facilitate transfer of vials from the first turret to the second turret, means for guiding transfer of the vials in said zone from the first turret to the second turret, said zone being rotationally spaced from the filling station in the direction of rotation of the first turret so that the partial filling of the vials is effected before they are

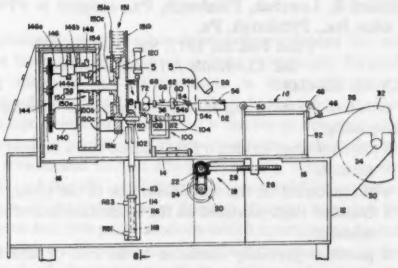


transferred to the second turret, adjacent said second turret a plugging station for inserting plugs into the vials in notches of the second turret at a location rotationally spaced from said zone in the direction of rotation of the second turret, a capping station for fitting caps onto the vials in notches of the second turret at a location rotationally spaced from said plugging station in the direction of rotation of the second turret and means for discharging the partially filled, plugged and capped vials from the second turret at a location rotationally spaced from the capping station in the direction of rotation of the second turret.

4,118,915
APPARATUS FOR AUTOMATICALLY APPLYING TUBING AROUND AN OBJECT

Harold R. Swenson, Walnut Creek, Calif., assignor to Systematic Packaging, Inc., Pleasant Hill, Calif.

Filed Feb. 24, 1977, Ser. No. 771,619
Int. Cl.[2] B29D 3/00; B65B 7/28
U.S. Cl. 53—291 37 Claims



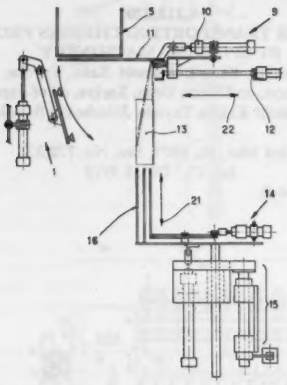
1. Apparatus for placing tubing of predetermined length around an object, comprising:
(a) means for supplying continuous tubing;
(b) means for cutting the continuous tubing into tubing of a predetermined length;
(c) means for holding externally a tubing of predetermined length; and
(d) means for moving the cut tubing around the object, said

holding means holding the tubing of predetermined length from the time the tubing is being cut to the time the cut tubing is moved around the object.

4,118,916
THERMOPLASTIC WRAPPING MACHINE

Jacques Fresnel, Paris, France, assignor to Sleever, Morangis, France

Filed Feb. 15, 1977, Ser. No. 768,748
Claims priority, application France, Feb. 24, 1976, 76 05033
Int. Cl.² B65B *21/24*
U.S. Cl. 53—292 **8 Claims**



1. An automatic thermoplastic machine for wrapping thermoplastic sections of sheathing or sleeves around containers, from a feed hopper, where the sleeves, or appropriate size, are stacked flat, up to a continuous device for shrinking these sleeves, the machine comprising:

opening means enabling the sleeves to be taken one by one from the hopper, at the same time slightly opening them;

conveying means for opening each sleeve substantially to a semicircle, then conveying it to a vertical plane above a conveyor of containers to be wrapped, said conveying means comprising extracting claws, two piston-and-cylinder units, one of which enables said extracting claws to be introduced into the small opening of the sleeve while the other serves subsequently to pivot the sleeve through 90° to a vertical position and a conveyor device provided with fingers the spacing between which enables a semicircular shape to be placed upon the sleeve; and

wrapping means also situated in said vertical plane enabling the sleeve to achieve its final circular shape and then be gradually wrapped around the container to be packaged;

wherein wrapping is coordinated such that successive opening, conveying, and sleeve-wrapping fit timewise between positioning of two adjacent containers traveling on said conveyor.

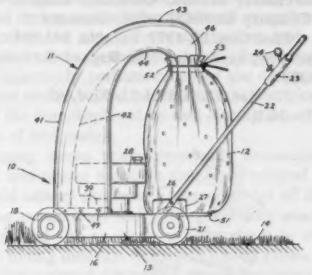
4,118,917
METHOD OF CUTTING AND BAGGING GRASS

Victor Leader, 21324 Lake George Dr. NW., Cedar, Minn. 55011

Division of Ser. No. 653,264, Jan. 28, 1976, Pat. No. 4,030,273. This application May 31, 1977, Ser. No. 801,528
Int. Cl.² A01D *91/00*
U.S. Cl. 56—1 **8 Claims**

1. A method of cutting grass and bagging the cut portions of the grass with a lawn mower having a housing enclosing a chamber, said housing including a top wall having front and rear portions and a continuous downwardly directed imperforate side wall extending entirely around the periphery of said top wall, motor means mounted generally centrally of said top wall, cutter blade means drivably connected to the motor means and located in the chamber below the top wall for rotation about a vertical axis, said cutter blade means having lift portions for causing air and cut grass to move vertically upwardly, said front portion of the top wall having an arcuate material discharge opening and a bagging chute for carrying the material from the opening upwardly and rearwardly over the motor means, to a material collection bag comprising:

moving the lawn mower in a direction to locate grass in the front area of the chamber, behind the side wall, erecting the grass in the front area of the chamber by moving air upwardly

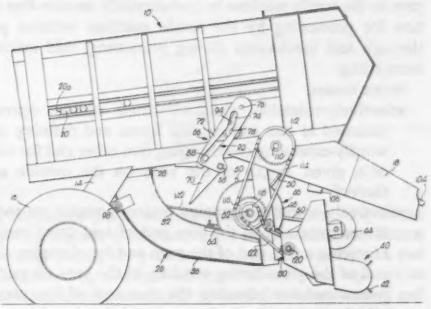


through the grass in the front area of the chamber, by rotating the cutter blade means about a vertical axis whereby the lift portions cause air to move under the side wall and vertically upwardly through the arcuate material discharge chute, cutting off top portions of the erected grass with the rotating cutter blade means, moving the cut portions of the grass vertically upwardly through the discharge opening, with the moving air caused by rotating the cutter blade means and delivering the cut portions of the grass through the bagging chute from the discharge opening upwardly and rearwardly over the motor means to the bag.

4,118,918
BALER APPARATUS

Allen Andrew White, Peabody, Kans., assignor to Hesston Corporation, Hesston, Kans.

Division of Ser. No. 675,529, Apr. 9, 1976. This application Mar. 16, 1977, Ser. No. 778,245
Int. Cl.² A01D *39/00*
U.S. Cl. 56—341 **26 Claims**



1. In a baler:

a hollow bale case defining a baling chamber;

a plunger reciprocable within said chamber, said case having an inlet for admitting a charge of material to the chamber for compaction by the plunger during its reciprocation;

a loading duct leading to said inlet;

apparatus for continuously feeding material into said duct to accumulate a charge of predetermined characteristics;

a loader for cyclically stuffing the charge from said duct into

the chamber in timed relationship to reciprocation of the plunger; and

mechanism for temporarily deactivating the loader between cycles if a charge having said predetermined characteristics fails to accumulate in said duct during the preceding stuffing cycle.

4,118,919

YARN TAKE-UP AND SUPPLY MECHANISM FOR USE WITH TEXTILE MACHINES

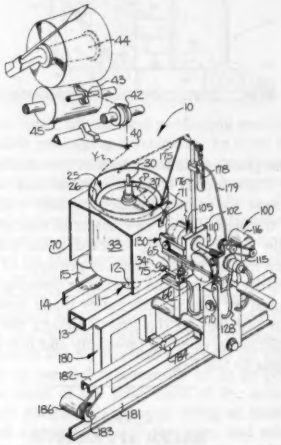
Lothar Marbacher, Krefeld, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany

Filed Oct. 17, 1977, Ser. No. 842,894

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1976, 2646873

Int. Cl.² D01H *15/00, 1/10*

U.S. Cl. 57—34 R **33 Claims**



1. A yarn take-up and supply mechanism for selected intermittent use with textile machines processing yarn, such as during a threading-up operation of the machine, characterized by a construction for receiving a free end of yarn, coiling a given length of the yarn into a single-layer winding to produce a yarn storage and completely releasing the free end and stored yarn to the textile machine in a substantially tension-free condition for processing by the textile machine without passing through said mechanism during processing, said mechanism comprising:

frame means;

selectively-rotatable elongate drum means operatively mounted at one end on said frame and defining an outwardly-extending overhanging free other end for winding of a given length of the yarn on the outside surface thereof;

selectively-operable clamping means mounted on and positioned generally at the free end of said drum means for receiving a free end of the yarn and for clamping the free end of the yarn during winding of the yarn on said drum means and for releasing the free end of the yarn after winding to supply the free end and the stored yarn to the textile machine from the surface of said drum means by unwinding; and

selectively-movable yarn guide means mounted on said frame for slidably receiving the clamped yarn therethrough, for movement from the free end of said drum means rearwardly along said drum means while guiding the yarn onto the outside surface of said drum means so that said drum means winds the yarn into a coiled single layer permitting subsequent unwiding in a substantially tension-free condition, and for releasing the yarn and returning to its starting position after winding.

4,118,920

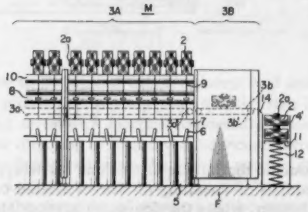
SYSTEM FOR TRANSPORTING CHEESES PRODUCED BY SPINNING MACHINERY

Tsutomu Miyazaki, Kariya; Takashi Kato, Toyota; Yoshihisa Suzuki, Nagoya, and Shozo Ueda, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 16, 1977, Ser. No. 778,323

Int. Cl.² D01H *9/18*

U.S. Cl. 57—34 R **3 Claims**



1. In a spinning machinery which has:

a plurality of longitudinally aligned spinning unit means for producing yarn to be wound on a take-up bobbin to produce a cylindrical yarn cheese;

head stocks at each end of said longitudinally aligned spinning unit means, a first head stock at one end and a second head stock at the other end;

open ended container means with an inside diameter slightly larger than said yarn cheese located adjacent said second head stock for containing said yarn cheeses; and

a single, horizontal conveyor means running horizontally between said head stocks above said spinning unit means for transporting said yarn cheeses at a uniform speed from said spinning unit means to said container means;

an improvement comprising:

two horizontal conveyor means above said spinning unit means for transporting said yarn cheeses from said spinning unit means to said container means at varying speeds, said two horizontal conveyor unit means being comprised of:

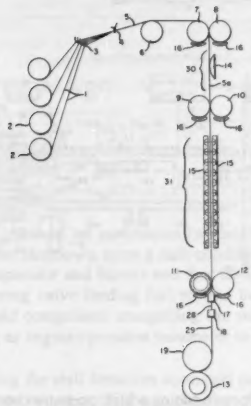
a first horizontal conveyor means positioned above said spinning unit means between said first and second head stocks for transporting said yarn cheeses from said spinning unit means to said second head stock at a uniform speed, and

a second horizontal conveyor means horizontally aligned with said first horizontal conveyor means and operating at a uniform speed higher than that of said first conveyor means, said second conveyor means being mounted on said second head stock between said first conveyor means and said container means for receiving said yarn cheeses from said first conveyor means and carrying said yarn cheeses to said container means at a speed faster than said first conveyor means.

4,118,921
YARN OF ENTANGLED FIBERS

Dustin Stetson Adams; Frederick C. Field, Jr., both of Wilmington, Del., and James Ronald Layton, Goodlettsville, Tenn., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 730,023, Oct. 6, 1976, Pat. No. 4,080,778, which is a continuation of Ser. No. 564,217, Apr. 1, 1975, abandoned. This application Oct. 19, 1977, Ser. No. 844,106
Int. Cl.[2] D02G 3/00, 3/24
U.S. Cl. 57—140 R 4 Claims

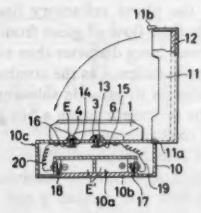


1. An entangled yarn of closely adjacent, synthetic organic fibers which are randomly intermingled along the length of the yarn to maintain the unity of the yarn by frictional constraint between the fibers; the yarn having an entanglement pin count of 3 to 50 millimeters and the fibers having a number average fiber length of 18 to 60 centimeters with a distribution of fiber lengths such that at least 5 percent of the fibers are no longer than 12.7 centimeters, 50 percent to 93.5 percent of the fibers are longer than 12.7 cm. and no longer than 76 centimeters, and at least 1.5 percent of the fibers are longer than 76 centimeters.

4,118,922
ELECTRONIC WATCH OR CLOCK AND ACCESSORY DEVICES THEREFOR

Toshikazu Ichiyanagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1976, Ser. No. 753,016
Claims priority, application Japan, Dec. 27, 1975, 50/156677
Int. Cl.[2] G04C 3/00
U.S. Cl. 58—23 BA 10 Claims



1. An electronic watch or clock comprising:

(A) a casing having a display window for time display;

(B) pulse generating means for producing timing pulses at a predetermined frequency;

(C) timing means for performing the timing based on said timing pulses produced from said pulse generating means, said timing means being incorporated within said casing and being electrically connected to said pulse generating means;

(D) display means for displaying the time, said display means being arranged in said casing to permit the display state to be viewed from said display window and being driven by said timing means in order to display the time;

(E) a chargeable electrical power source battery for supplying electrical power to said pulse generating means and to said timing means, said battery being incorporated within said casing and being connected to said pulse generating means and said timing means, said pulse generating means and said timing means being rendered operative with the electrical power supply from said battery; and

(F) electrical external connecting means for making it possible to selectively perform either of the charging of said electrical power source battery and the electrical correction of the time displayed by said display means from the outside of said casing;

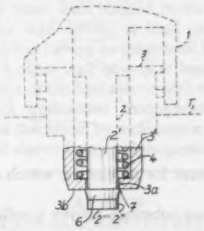
said connecting means being electrically connected to said battery and said timing means to supply an external electrical power to said battery and being arranged to cut off the supply of the timing pulses from said pulse generating means to said timing means and also to supply a pulse signal to said timing means with timing different from said timing pulses;

the electrical external connecting means thus being arranged not only to permit supply of the electrical power therethrough to the electrical power source battery for charging the battery but also to permit connection of a gaining or losing error of the time displayed by the display means by cutting off the supply of the timing pulses to the timing means or by supplying said pulse signal at the timing differing from said timing pulses.

4,118,923
PUSH-BUTTON ASSEMBLY AND MANUFACTURING METHOD

Pierre Bourquard, Boecourt, Switzerland, assignor to Pibor S.A., Switzerland

Filed Oct. 15, 1976, Ser. No. 732,665
Claims priority, application Switzerland, Oct. 20, 1975, 75/13551; Feb. 24, 1976, 76/2241
Int. Cl.[2] G04B 37/00
U.S. Cl. 58—88 B 5 Claims



1. A method of manufacturing a push-button assembly of the type having a guide tube receiving a stem of the push-button and a spring biasing the push-button and stem axially to a rest position defined by abutment of a part on said stem adjacent an operative end thereof externally with an abutment-forming end of the tube, said part of the stem being wider than the inner diameter of a bore in said abutment-forming end of the tube, comprising the steps of providing a push-button with a stem of which said part adjacent its operative end is a shoulder defined by an elastically-deformable generally frusto-conical part tapering, from a shoulder-forming end of maximum diameter, towards said operative end, said frusto-conical part having a maximum outer diameter greater than the inner diameter of said bore but being elastically deformable to pass through said bore, inserting the stem through the spring and tube, and forc-

ing said frusto-conical part fully through said bore with elastic deformation of said frusto-conical part by coaction with said bore of the tube until said shoulder-forming end of maximum diameter reassumes its original dimensions and abuts against said end of the tube.

2. A push-button assembly, comprising;

a push-button;

a stem rigid therewith, extending axially from a central part of the push-button to an operative end of the stem; and having a flat, continuous surface at the operative end;

a guide tube receiving the stem for axial movements of the stem along the guide tube, the guide tube having an abutment end remote from the push-button and having a bore in the abutment end;

a generally frusto-conical member integral with the stem adjacent the operative end, tapering toward that end, and having a shoulder end, of diameter greater than the bore of the guide tube, the frusto-conical member being elastically deformable, in a coaction thereof with the bore of the tube, by axially moving the pushbutton and stem in the original assembling of the assembly to force the frusto-conical member through the bore; and

a spring in the guide tube, biasing the push button and stem axially to a rest position defined by abutment of the shoulder and of said member of the stem on the abutment end of the tube, for normally maintaining the rest position in the use of the assembly, subject to an axial movement of the push-button and stem, against the spring, in which movement the shoulder end becomes spaced from the abutment end, being thereafter resiliently returned by the spring to the abutment end.

4,118,924

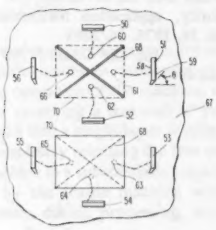
DISPLAY SYSTEM FOR WATCHES AND THE LIKE

Donald M. Foellner, 201 Swarthmore Ave., Folsom, Pa. 19033

Filed Apr. 18, 1977, Ser. No. 788,695

Int. Cl.² G04B *19/30*; G08B *23/00*; G04B *11/06*

U.S. Cl. 58—127 R **5 Claims**



1. A display system for an electric watch or the like, comprising:

a generally planar substrate having a reflective upper surface;

a group of seven generally rectangular display elements formed of light-transmitting plastic and arranged upon said substrate so as to define a pair of contiguous rectangles;

a group of seven miniature incandescent lamps upstanding from said substrate and in close proximity to ones of said display elements;

a generally X-shaped partition of an opaque material upstanding from said substrate to substantially prevent light from all but one of said miniature incandescent lamps from striking ones of said display elements;

said display elements each having a first, generally vertical face confronting the nearest one of said incandescent lamps; and

an opposed face disposed at some angle θ to the plane of said substrate, θ being less than 90°.

4,118,925

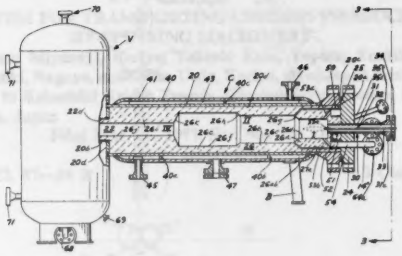
COMBUSTION CHAMBER AND THERMAL VAPOR STREAM PRODUCING APPARATUS AND METHOD

John S. Sperry, Houston; Richard W. Krajicek, Sugar Land, and Robert R. Cradeur, Spring, all of Tex., assignors to Carmel Energy, Inc., Houston, Tex.

Filed Feb. 24, 1977, Ser. No. 771,558

Int. Cl.² F02G *3/00*

U.S. Cl. 60—39.05 **22 Claims**



1. An apparatus for producing a high pressure thermal vapor stream of steam and combustion products substantially free of oxidizing gases by burning a fuel in about stoichiometric amounts of air comprising:

casing means having plural, substantially cylindrical, refractory lined combustion zones of varying diameters forming a multiple zone combustion chamber extending along the longitudinal axis of the casing means;

said casing means having means sealing one end thereof and connecting means on an opposite end thereof for connection with a vapor producing vessel means;

a first zone of said plural refractory lined combustion zones having first a predetermined inner diameter for flowing gases therethrough;

first injection means for introducing predetermined volumes of air and fuel into said first zone and igniting the air and fuel therein;

second air injection means for injecting a second predetermined volume of air into said first zone adjacent said first injection means to cause turbulence and intermixing of the air and fuel in said first zone to facilitate complete combustion;

a second zone of the plural refractory lined combustion zones for receiving the flow of gases from said first zone and having a greater inner diameter than said first zone to provide maximum turbulence as the combustion products rapidly expand therein to provide substantially complete combustion of the mixture forming a hot gas stream substantially free of oxidizing gases;

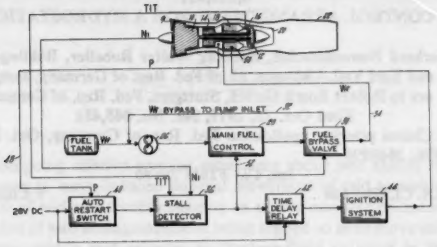
a third zone of the plural, substantially cylindrical, refractory lined combustion zones for receiving the flow of gases from said first and second zones and having a greater inner diameter than said second zone for rapidly expanding the combustion gases to maintain maximum turbulence as the combustion products expand to facilitate complete combustion; and

vapor producing vessel means for receiving the combustion gases to form a product stream of steam and combustion products through direct contact between the combustion gases and water.

4,118,926
AUTOMATIC STALL RECOVERY SYSTEM

Salvatore J. Curvino, Palm Beach Gardens, and Albert E. Warner, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1977, Ser. No. 773,099
Int. Cl.[2] F02C 7/22
U.S. Cl. 60—39.06 5 Claims



5. The method of automatically restarting a gas turbine engine after shutdown upon a stall condition, said engine having a compressor and burner and fuel flow means including a fuel metering valve feeding fuel to said burner and a turbine driving said compressor comprising the steps of:

sensing an engine operation parameter to detect a stall condition,

activating the stall detectors upon said parameter reaching a predetermined condition in the step of sensing,

disconnecting the fuel flow from said fuel metering valve to said burner by said stall detector,

igniting a spark igniter in said burner,

sensing a compressor discharge pressure,

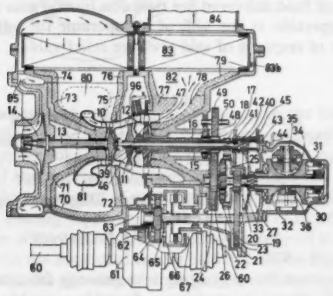
deactivating the stall detector and simultaneously connecting the fuel metering means to the engine and deactivating the spark igniter ignited in the step of igniting when the compressor discharge pressure obtained in the step of sensing reaches a predetermined value and,

holding said spark igniter in the ignition condition for a finite period of time after the step of deactivating.

4,118,927
GAS TURBINE POWER PLANT

Sven-Olof Kronogard, Lomma, Sweden, assignor to United Turbine AB & Co. Kommanditbolag, Malmo, Sweden

Filed Nov. 24, 1976, Ser. No. 744,928
Claims priority, application Sweden, Dec. 5, 1975, 75137158
Int. Cl.[2] F02C 3/10, 7/02
U.S. Cl. 60—39.16 R 5 Claims



1. A gas turbine power plant having conventional internal auxiliaries and including three axially aligned turbine rotors arranged in series downstream of a combustor, said gas turbine power plant comprising:

(A) a compressor delivering air to said combustor and being drivingly connected to a first rotor of said series to form a rotor-spool, said first mentioned turbine rotor being dimensioned with insufficient capacity to drive said compressor at full load of the plant;

(B) means mounting said two other turbine rotors upon concentric shafts and gearing means located at the end of the concentric shafts mounting said second and third turbine rotors remote from said compressor/first turbine rotor spool to drivingly interconnect said concentric shafts at an output shaft;

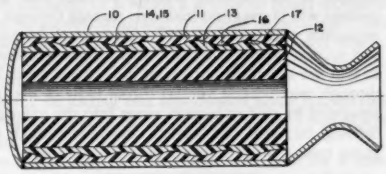
(C) first means, including a third shaft extending centrally through the innermost of said concentric shafts, for transferring power from the output end of said gearing means to said spool, said first means being adapted to permit said third shaft to rotate at supercritical speed also when the power plant is idling; and

(D) second means for transferring power from said gearing means to said internal auxiliaries at the input from one of said other two rotors to said gearing means.

4,118,928
MEANS FOR MOUNTING SOLID PROPELLANT IN A ROCKET MOTOR

Bobby J. Lyles, Yardley, Pa., assignor to Thiokol Corporation, Newtown, Pa.

Filed Jul. 12, 1973, Ser. No. 378,739
Int. Cl.[2] F02K 9/04
U.S. Cl. 60—255 6 Claims



1. In a rocket motor containing a solid propellant, a thrust chamber case having an annular inner wall, an annular first sleeve having an outer wall bonded to the inner wall of the case and an inner wall having at least one convolution, an annular second sleeve having an inner wall bonded to the solid propellant and an outer wall having at least one convolution which matches that of the first sleeve with the convolutions of each meshed but unattached throughout the propellant's length and spaced therefrom by a clearance gap, and the material of the second sleeve being polyisoprene.

4,118,929
IMPACTION AUGMENTED JET ENGINE

Thomas H. Sharpe, 502 Dorr Ave., Belvedere, S.C. 29841

Continuation-in-part of Ser. No. 739,943, Nov. 9, 1976, and Ser. No. 700,488, Jun. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 557,992, Mar. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 379,843, Jul. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 191,627, Oct. 22, 1971, Pat. No. 3,750,400, said Ser. No. 739,943, is a continuation of said Ser. No. 557,992. This application Mar. 17, 1977, Ser. No. 778,424
Int. Cl.[2] F02K 7/10
U.S. Cl. 60—262 5 Claims

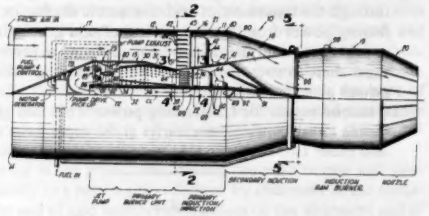
1. An impaction/induction engine comprising:

a burner unit defining a combustion chamber therein, a burner inlet to said combustion chamber and an exhaust outlet from said combustion chamber;

an exhaust separator unit connected to said burner chamber at said exhaust outlet for separating a portion of the ex-

haust gases in said combustion chamber, said exhaust separator unit defining the exhaust venturi throat therein through which the separated portion of the exhaust gases pass to generate a pressure drop therein;

a jet pump unit connecting said exhaust venturi throat in said exhaust separator unit to said burner inlet to force the separated portion of the exhaust gases into said combustion chamber through said burner inlet, said jet pump unit defining a pumping venturi throat therein through which the separated portion of the exhaust gases passes and including a fuel injector assembly for injecting fuel into said combustion chamber through said pumping venturi throat to pressurize said combustion chamber;



a fresh air separator unit defining a fresh air passage therein open to the atmosphere at its forward end and including a plurality of air impaction vanes in said fresh air passage, each of said air impaction vanes defining a vane passage therein, an air impaction inlet opening to said vane passage facing the forward end of said fresh air passage so that a portion of the fresh air flowing through said fresh air passage will impact into said vane passage through said air impaction inlet opening, said vane passage connected to said exhaust venturi throat in said exhaust separator unit so that the separated portion of the exhaust gases flowing through said exhaust venturi throat induces the fresh air separated by said impaction vanes into the exhaust gases flowing into said combustion chamber through said jet pump unit.

4,118,930

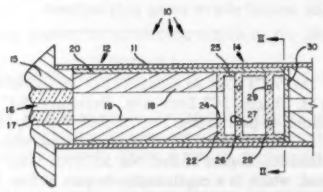
FILTER-COOLER

Michael D. Jacobson, Ridgecrest, and G. Franklin Grouwinkel, Monterey Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1974, Ser. No. 480,189

Int. Cl.[2] F02K *11/00*

U.S. Cl. 60—266 **9 Claims**



1. For use in conditioning gases bled from a rocket chamber, a filter cooler comprising:

a housing;

a hollow block of solid material in said housing acting as a conduit for said gases and endothermically reacting therewith;

a plurality of filter elements successively mounted in said housing collectively providing a tortuous path for conduit of said gases after a passage through said hollow block;

each said filter element having a plurality of ports passing angularly therethrough causing said gases to form a vortex upon leaving said element;

said ports in each said filter element being angled in a direction opposite that of said ports in each said successive filter element, whereby said gases are forced to sharply reverse direction upon entering each successive filter element.

4,118,931

CONTROL ARRANGEMENT FOR A HYDROSTATIC DRIVE

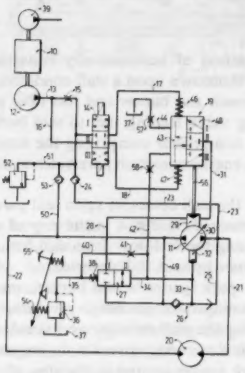
Gerhard Nonnenmacher, Korntal; Walter Robeller, Böblingen, and Karl Veil, Uhlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 845,451

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648094

Int. Cl.[2] F16H *39/46*

U.S. Cl. 60—444 **9 Claims**



1. A control arrangement for a hydrostatic drive comprising a gear pump; a fluid motor; first conduit means connecting said gear pump with said fluid motor; a feed pump having an outlet; second conduit means connecting said outlet with said first conduit means; a throttle in said second conduit means; a combustion engine driving said gear pump and said feed pump; pressure proportional adjusting means in circuit with said second conduit means downstream of said throttle and operatively connected to said gear pump for adjusting the amount of fluid delivered per time unit by the latter in dependence on the pressure difference at opposite sides of said throttle; a pressure-relief valve in circuit with said first conduit means and adjusting the gear pump upon reaching a predetermined maximum pressure in said first conduit means in a direction reducing the amount of fluid delivered per time unit by said gear pump; and means operable at the will of an operator for adjusting the pressure of response of said pressure relief valve.

4,118,932

ENERGY CONVERSION SYSTEMS

Alistair David Sivill, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 10, 1977, Ser. No. 795,387

Claims priority, application United Kingdom, May 25, 1976, 21600/76

Int. Cl.[2] F03B *13/12;* E02B *9/08*

U.S. Cl. 60—500 **7 Claims**

1. A system for converting wave energy from the sea into electrical energy, comprising a floatable assembly which, in use, is moored at sea and which is capable of internal movement in response to the action of waves, said assembly including a hollow body mounted on a shaft and reciprocable angu-

larly about the axis of the shaft in response to said internal movement, said body and said shaft defining respective parts of a pump which also comprises a pair of spaced, opposed annular cam tracks extending around said axis and rigidly connected to one of the pump parts defined by the body and the shaft, and at least one piston and cylinder arrangement disposed between the cam tracks and rigidly secured to the other of said pump parts so as to extend substantially parallel with said axis, the cam tracks and the piston and cylinder arrangement thereby

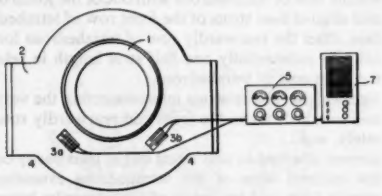
undergoing relative angular movement about said axis in response to wave-induced internal movement of said assembly, each of said cam tracks engaging an axially movable operating piston of said arrangement and being shaped so as to move said piston within said cylinder to displace fluid received in the cylinder in response to said relative angular movement, the system further comprising an electricity generator which can be driven in response to displacement of the fluid in the cylinder.

4,118,933

BEARING LOAD INDICATOR

William H. Coleman, Marple, and Francis S. Maszk, Westtown Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 7, 1977, Ser. No. 804,428
Int. Cl.² G01M *13/04*
U.S. Cl. 73—766 **6 Claims**



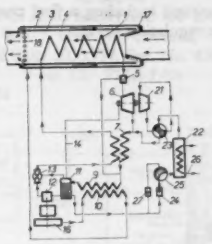
1. A bearing load indicator for determining the load on a bearing utilizing the strain on a predetermined portion of a bearing support yoke, said bearing load indicator comprising a plurality of strain gauges disposed on one side of the bearing support yoke, a plurality of strain gauges disposed on the other side of the bearing support yoke, the plurality of strain gauges on one side of the bearing being generally disposed in a plane transverse to the rotational axis of said bearing and generally coplanar with the plurality of strain gauges on the other side of the bearing, and means for comparing the change in resistance of said strain gauges and for producing a signal indicative of the reactive load on the bearing and eliminating the effect of frictional torque on the bearing.

4,118,934

PROCESS AND APPARATUS FOR TRANSFORMING HEAT AT A RELATIVELY LOW TEMPERATURE INTO POWER OR ENERGY

Gabriel Brola, Nogent-sur-Marne, France, assignor to Enterprise Industrielle de Chaudronnerie, France

Filed Mar. 19, 1976, Ser. No. 668,671
Claims priority, application France, Mar. 21, 1975, 75 08893
Int. Cl.² F01K *25/06*
U.S. Cl. 60—647 **6 Claims**



1. An apparatus for transforming relatively low temperature heat contained in a first fluid into power or energy by exchanging the relatively low temperature of heat of said first fluid with a cooler second fluid comprising:

means for compressing said second fluid to a critical pressure to produce a liquid compressed second fluid,

means for heating said liquid compressed second fluid by a heat exchange to produce a preheated liquid second fluid,

means for superheating said preheated liquid second fluid by a heat exchange with said relative low temperature first fluid to produce a superheated liquid second fluid at said critical pressure,

means for expanding said superheated liquid second fluid to produce power or energy and to produce a first vaporized fluid,

means for cooling said first vaporized fluid by a heat exchange with said liquid compressed second fluid to produce a cooled first vaporized fluid,

means for condensing said cooled first vaporized fluid by a heat exchange with a gaseous third fluid to produce said second fluid, and

means for mixing said gaseous third fluid with said relative low temperature first fluid; said means for superheating and means for mixing comprising:

a casing through which said relatively low temperature heated first fluid passes,

a jacket surrounding said casing including an inlet for said gaseous third fluid, first ports located at a first extremity of said casing for coupling said jacket with the inside of said casing, second ports located at a second extremity of said casing, a tubular exchanger inside said casing for carrying said preheated liquid second fluid, and a convergent nozzle directing said first fluid through the said tubular exchanger, said convergent nozzle having a larger outer section facing said second ports to thereby channel said gaseous third fluid through and around said tubular exchanger.

4,118,935

REGULATION SYSTEM FOR A STEAM TURBINE INSTALLATION

Göran Andersson, Lund, Sweden, assignor to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 9, 1976, Ser. No. 749,095
Claims priority, application Sweden, Dec. 19, 1975, 7514421
Int. Cl.² F01K *7/06*
U.S. Cl. 60—662 **6 Claims**

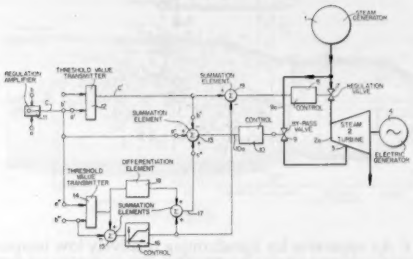
1. A regulation system for regulating a predetermined mag-

nitude of a steam turbine installation having a steam generator and a multi-stage turbine including a high-pressure stage having an entrance to said high-pressure stage, said regulation system comprising, in combination:

a regulation valve arranged between the steam generator and the entrance to the high-pressure stage of the turbine;

a by-pass valve arranged between the steam generator and the high-pressure stage in parallel to said regulation valve and connected with a location of the high-pressure stage disposed downstream of said entrance to said high-pressure stage;

a first control circuit including a first control device provided for the regulation valve;



a second control circuit including a second control device provided for the by-pass valve;

said first control circuit for the regulation valve delivering a signal which influences said second control device for said by-pass valve such that when the opening of the regulation valve exceeds a predetermined magnitude said second control device for the by-pass valve opens the by-pass valve to a predetermined magnitude; and

a differentiation element connected in parallel with the second control circuit for the by-pass valve for influencing the magnitude of opening of the by-pass valve as a function of variations in the signal received from the first control circuit of the regulation valve.

4,118,936

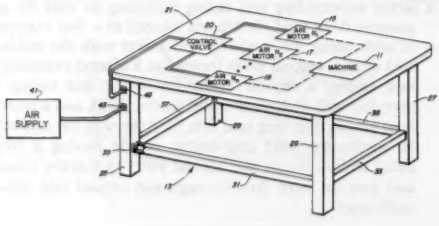
SURGE TANK FOR PNEUMATICALLY OPERATED MOTORS

Robert A. Leclair, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Mar. 31, 1977, Ser. No. 783,088

Int. Cl.[2] F01B *21/00*

U.S. Cl. 60—720 **6 Claims**



1. A support apparatus providing both a support surface for a pneumatically operated machine and a surge tank for storing pneumatic fluid under pressure, comprising:

a support adapted to provide a suitable surface for supporting a pneumatically operated machine and pneumatically operated motors operatively coupled to the machine for imparting operative motion to the machine;

a support frame for supporting said support at a predetermined configuration, said support frame including a plurality of hollow support members which are in fluid communication with each other in an essentially air tight manner;

first conduit means leading into the hollow portions of said support frame, said first conduit means adapted to couple a source of pneumatic fluid to the hollow portions of said support frame in an essentially air tight manner; and

second conduit means adapted to provide fluid communication between the hollow portions of said support frame and the pneumatically operated motors, such that said support frame not only provides mechanical support for the pneumatically operated motors and machine on said support but also provides surge tank means for the pneumatically operated motors.

4,118,937

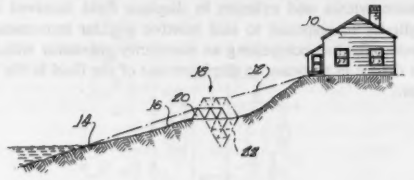
METHOD AND MEANS FOR BEACH RESTORATION

David Joel Mansen, 1312 Livingston St., Evanston, Ill. 60201

Filed Aug. 3, 1977, Ser. No. 821,438

Int. Cl.[2] E02B *3/04*

U.S. Cl. 405—30 **6 Claims**



1. An elongate truss structure for use as a breakwater and for wave and wind activated formation of a new dune on an eroded beach, said structure having a front side and a rear side and comprising

a. at least two parallel and laterally connected rows of interconnected frame units, each consisting of six lightweight tubular struts of substantially equal lengths which are joined together three and three at their ends to form an opensided tetrahedron with a substantially horizontal triangular base and a vertex thereabove,

b. means connecting a base strut in one of said tetrahedrons of each row with a substantially aligned base strut in a neighboring tetrahedron of the same row so as to place the top joints of each triangular base in said rows forwardly of its base strut,

c. means connecting each of said top joints in the rearwardly row of tetrahedrons with one of the joints between said aligned base struts of the front row of tetrahedrons to thus offset the rearwardly row of tetrahedrons longitudinally by substantially one half strut length in relation to the front row of tetrahedrons,

d. lightweight tubular struts interconnecting the vertexes of said tetrahedrons in the front and rearwardly rows separately, and

e. screens attached to said struts and at least partly covering the inclined sides of the tetrahedrons extending rearwardly from said top joints of the triangular bases.

4,118,938

APPARATUS FOR AND METHOD OF DRIVING TUNNELS

Eberhard Unger, Lünen, and Wolf-Rüdiger Von Schenk, Borstel bei Winsen, Luhe, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Nov. 3, 1976, Ser. No. 738,419

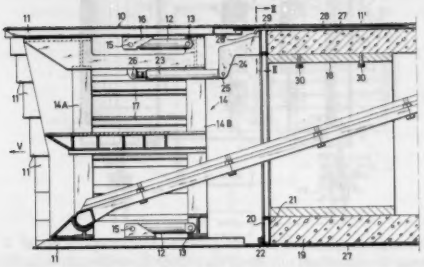
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2550050

Int. Cl.[2] E21D *11/10*

U.S. Cl. 405—145 **12 Claims**

1. Apparatus for use in driving tunnels; said apparatus com-

prising a drive shield composed of a plurality of elongate drive members arranged side-by-side in parallel relationship, a frame supporting the members for individual longitudinal displacement, rams connected between the frame and the drive members for alternately advancing the drive members and the frame, means defining a fluid-concrete reception space for producing a concrete lining supporting the tunnel wall rearwardly of the advancing direction, said defining means at least including a body provided with filter means for contacting the fluid concrete in the reception space to permit withdrawal of water by suction, further rams connecting said body to the



frame of the drive shield and permitting the fluid concrete to be compressed, at least some of the plurality of drive members having rear extensions which project rearwardly beyond the frame and over the concrete reception space, each of said rear extensions provided with pipe means which extend to the rear of its extension such that when the associated drive member is advanced a space is formed by the advance of said extension, and filling material can be injected through said pipe means, wherein the space formed by the advance of said extension is gradually filled with filling material starting at the rear of said space and working toward the front of said space.

4,118,939

MINE ROOF SUPPORT

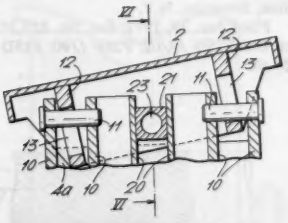
Graham John Saunders, Newcastle Upon Tyne, England, assignor to Huwood Limited, Gateshead on Tyne, England

Filed Aug. 30, 1977, Ser. No. 829,200

Claims priority, application United Kingdom, Sep. 3, 1976, 36517/76

Int. Cl.[2] E21D *15/44*

U.S. Cl. 61—45 D **7 Claims**



1. A mine roof support having a base and a roof engaging cover, adjustment means mounted on the base by which the cover can be moved towards and away from the base, and a framework movable with the adjustment means and to which the cover is connected so that it can tilt in all directions relatively to the framework, the connection between the components that are the cover and the framework including means forming an axle fixed relatively to one of the components and about which the cover can tilt relatively to the framework both about the axis of the axle and longitudinally of the axle, means limiting the angle through which the cover can tilt longitudinally of the axle, and means by which the axis about which the cover can tilt longitudinally of the axis is restricted to an upright plane, the means including a rod fixed to one of the components and journalled in a follower that co-operates with guide means fixed to the other of the components, the co-operation between the guide means and the follower being such to permit and confine movement of the axis of the rod in and to the upright plane.

4,118,940

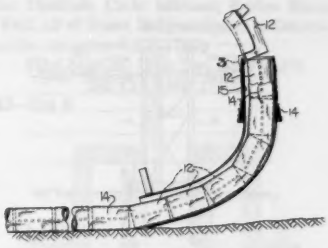
DRAIN LINE AND METHOD OF INSTALLING

Frank T. Beane, Rte. 7, Hwy. 49, Concord, N.C. 28025

Filed Aug. 23, 1977, Ser. No. 826,974

Int. Cl.[2] F16L *1/04*

U.S. Cl. 405—174 **5 Claims**



1. In a method of installing drain lines in a field by excavating a trench, placing in the trench a plurality of drain tiles each of determinate length, and backfilling the trench, an improvement which more positively aligns the drain tiles and maintains such alignment against shifting soil and comprising the steps of enclosing the drain tiles being placed in the trench with an elastic, permeable, tubular knit fabric sleeve having a length substantially greater than the combined length of a plurality of the drain tiles, and forcibly aligning adjacent drain tiles in the trench and thereafter maintaining such drain tiles in alignment by means of the elasticity of the enclosing sleeve.

4,118,941

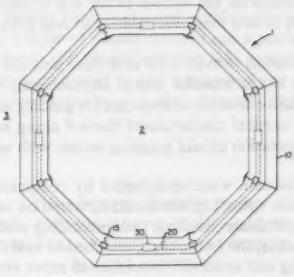
STRESSED CAISSON RETAINED ISLAND

John C. Bruce, Thornhill; John F. Davies; Jacobus J. A. de Jong, both of Calgary; Kalju Pullerits, Western Toronto, and Richard H. B. Sangster, Calgary, all of Canada, assignors to Exxon Production Research Company, Houston, Tex.

Filed May 16, 1977, Ser. No. 796,927

Int. Cl.[2] E02B *27/30*

U.S. Cl. 405—204 **9 Claims**



1. Apparatus for constructing an island in a body of water comprising:

a plurality of caissons adapted to be set upon the bottom of the body of water; and

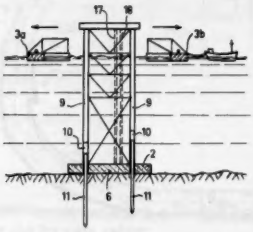
flexible means for connecting the caissons together to form a ring of connected caissons which is capable of containing an amount of fill material sufficient to construct an island in the body of water, said connecting means being sufficiently flexible so as to permit relative movement between said plurality of caissons in any direction and having controlled flexibility.

4,118,942

MARINE PLATFORM FOR OFFSHORE DRILLING OPERATIONS AND THE LIKE

Jean Liautaud, 49 Avenue de Segur, Paris 75007, France

Filed Oct. 15, 1976, Ser. No. 732,812
Claims priority, application France, Nov. 17, 1975, 75 34950
Int. Cl.[2] E02B *17/00*
U.S. Cl. 405—204 **5 Claims**



1. A marine platform structure adapted to be towed towards a desired offshore site in an upright position, comprising:

a horizontal caisson until enclosing tubular elements and adapted to be placed onto the submarine ground at said offshore site;

means for selectively introducing into and evacuating from said tubular elements a fluid selected from the group consisting of air, water ballasting material and petroleum extracted from the submarine soil;

a substantially tubular tower-like structure having a plurality of parallel columns extending vertically upward from the upper side of said caisson unit, the lower end of said columns being rigidly fixed to said caisson unit;

a horizontal deck unit rigidly fixed to the upper ends of said columns;

a float unit comprising at least two detachably assembled float unit elements surrounding said tower-like structure, said float unit being vertically movable along said tower-like structure between a lowermost position wherein said float unit is located adjacent to said caisson unit and an uppermost position wherein said float unit is located in the vicinity of the underside of said deck unit, the buoyancy of said float unit being such that the latter always floats substantially on the surface of the sea, irrespective of the position of said float unit relative to said tower-like structure;

gripping means provided on said float unit for the prevention of any substantial lateral displacement of said float unit relative to said columns and for guiding said float unit during vertical displacement thereof along said columns by cooperation of said gripping means with said columns; and

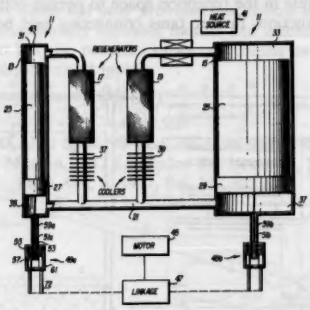
constant tension winches actuated by computer controlled electronic actuating means and mounted on said deck unit for respectively winding and unwinding said cables, the free ends of the latter being attached to said float unit for allowing said tower-like structure to move vertically with respect to said float unit while maintaining said cables under a constant predetermined tension when air or ballasting material is introduced into said hollow elements in said caisson unit for varying the buoyancy of said caisson unit.

4,118,943

REFRIGERATION SYSTEM WITH MAGNETIC LINKAGE

Fred Freeman Chellis, Concord, Mass., assignor to Cryogenic Technology, Inc., Waltham, Mass.

Filed Mar. 17, 1976, Ser. No. 665,848
Int. Cl.[2] F25B *9/00*
U.S. Cl. 62—6 **15 Claims**



1. In a refrigeration apparatus including a displacer mounted for reciprocating sliding movement in a sealed elongated working vessel between first and second positions to alternately effect compression and expansion in said working vessel;

an auxiliary vessel attached to an end of said working vessel and being sealed therewith;

a rod coupled to said displacer and extending into said auxiliary vessel;

a magnetic-material follower attached to said rod in said auxiliary vessel; and

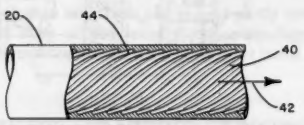
a magnetic-material driving means mounted outside said auxiliary vessel but being moveable therealong for magnetically attracting said magnetic-material follower and thereby moving said magnetic-material follower along said auxiliary vessel and said attached displacer along said working vessel.

4,118,944

HIGH PERFORMANCE HEAT EXCHANGER

Richard G. Lord, Liverpool; Rudy C. Bussjager, Minoa, and David F. Geary, E. Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,211
Int. Cl.[2] F25D *17/02;* F28F *1/40;* F15D *1/06*
U.S. Cl. 62—98 **15 Claims**



1. A method of operating a cooler having a fluid which is cooled by a refrigerant which comprises:

passing the refrigerant through an internal integrally finned tube;

directing the fluid to be cooled in heat exchange relationship with the tube having the refrigerant flowing therethrough; and

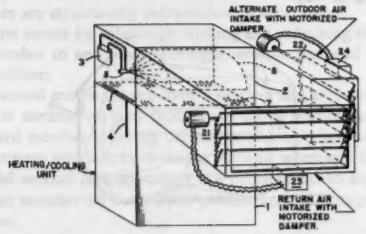
circuiting the refrigerant so that under full load conditions the temperature drop of the refrigerant within the tude does not exceed 5° F.

4,118,945

ENTHALPY CONTROL FOR AN ENVIRONMENTAL HUMIDIFICATION AND COOLING SYSTEM

Evelyn Boochever, and Michael Munk, both of 28 Dorchester Dr., Port Chester, N.Y. 10573

Continuation-in-part of Ser. No. 625,923, Oct. 28, 1975, Pat. No. 4,042,016. This application Aug. 25, 1976, Ser. No. 717,586
Int. Cl.[2] F25D *17/04;* F24H *3/02;* B05B *3/14*
U.S. Cl. 62—176 C 7 Claims



1. In an evaporative cooling air conditioning system for an enclosure receptive of return air from the enclosure or outdoor air:

controllable damping means for selecting the most favorable air to be conditioned including means for sensing the temperature/enthalpy of the outdoor and return air to effect comparison thereof to control the damping means to allow the optimal air into the system to achieve maximum cooling prior to the further cooling thereof in the system;

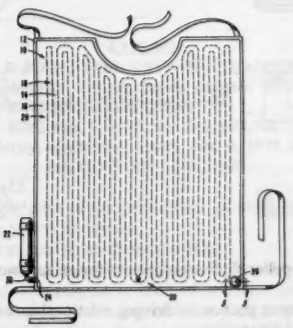
a cooling unit receptive of the optimized air for cooling same; and means for controlling the enthalpy of the system during the cooling of the optimum air comprising actuatable ultrasonic spray means receptive of a supply of water during use for atomizing the water and spraying same into the return air and means for actuating and deactuating the ultrasonic spray means to control the level of humidification in the return air.

4,118,946

PERSONNEL COOLER

Eddie Sam Tubin, 4419 Fulton, Sherman Oaks, Calif. 91403

Filed Nov. 23, 1976, Ser. No. 744,318
Int. Cl.[2] F25B *19/00*
U.S. Cl. 62—514 R 7 Claims



1. A flexible panel to be worn adjacent a portion of the human body for cooling, which comprises:

two flexible plastic sheets which are joined to form two tortuous, adjacent, generally co-extensive, non-communicating fluid paths, one of said fluid paths being substantially and permanently filled with a viscous liquid heat transfer media and the other of said fluid paths being in communication with a reservoir of pressurized gas;

means between said reservoir and said other fluid path for regulating the flow of pressurized gas through said other fluid path and a pressure relief means in said other fluid path and positioned at a point remote from said reservoir to limit the gas pressure and gas flow rate in said other fluid path; and

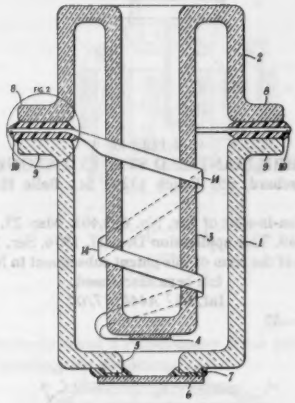
means for holding said sheet in place adjacent a portion of the human body.

4,118,947

LOW THERMAL LOSS CRYOGENIC CONTAINERS FOR INFRARED RADIATION DETECTING DEVICES, WITH INTEGRATED FEED-THROUGH CONNECTIONS

Karl Heinz Diedrich; Carlo Misiano; Enrico Simonetti, and Marco Fazi, all of Rome, Italy, assignors to Selenia-Industrie Elettroniche Associate S.p.A., Italy

Filed May 19, 1977, Ser. No. 798,276
Int. Cl.[2] F25B *19/00*
U.S. Cl. 62—514 R 4 Claims



1. A cryogenic container, with low thermal losses, for infrared detecting devices, with integrated feed-through connections, comprising a first container element provided with an outer wall having an edge with an edge surface; a second container element provided with an outer wall having an edge with an edge surface facing said first container element edge surface to define an annular zone; a substrate within the annular zone; a plurality of conductors formed on said substrate by micro-circuitry techniques, said conductors extending through said annular zone and projecting both inwardly and outwardly of said container; a flexible element within said container and consisting of a layer of plastic material and a plurality of conductive tracks on said plastic material, said conductive tracks having one end connected to said conductors and another end adapted for connection to an active element inside said container.

4,118,948

TWO PIECE FINGER RING

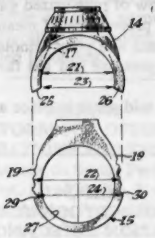
Sidney Gralnik, 4712 Cleveland St., Hollywood, Fla. 33021

Filed Mar. 16, 1977, Ser. No. 778,162
Int. Cl.[2] A44C *9/00*
U.S. Cl. 63—15 6 Claims

1. A finger ring comprising:

a preformed ring base, said base being a molded, closed circular band of metal having an upper portion with an exterior surface of a particular contour; and

a preformed ring cap, said cap being a molded, arcuate segment of metal having an interior surface closely fitting



said contour of said exterior surface, said base and cap molded to interlock with each other.

4,118,949

BRILLIANTIZED STEP CUT STONE

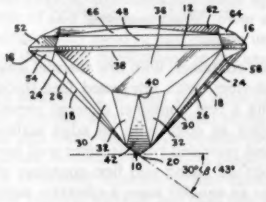
Henry Grossbard, 552 Beach 132nd St., Belle Harbor, N.Y. 11694

Continuation-in-part of Ser. No. 690,401, May 27, 1976, Pat. No. 4,020,649. This application Dec. 27, 1976, Ser. No. 754,110

The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.

Int. Cl.[2] A44C *17/00*

U.S. Cl. 63—32 **5 Claims**



1. A brilliantized step cut diamond comprising: a straight edged polygonal shaped girdle with a plurality of side facets and corner facets; a crown, said crown having a girdle break, a table break and a table, said table break being cut with triangular shaped facets and said girdle break being cut with quadrilaterally shaped facets; and a pyramidal base, said pyramidal base having a girdle break, a culet break, a point culet and a plurality of ridges, each of said ridges extending from said culet toward a corner of said girdle, a fan of at least three pairs of triangular halves symmetrically disposed about each ridge of the pyramidal base, a kite shaped facet on each side of the base on the culet break and disposed between a pair of adjacent fans, and a shield shaped facet on each side of the base in the girdle break, each shield shaped facet having a base line parallel to the girdle and an apex in contact with a point of the associated kite shaped facet, and a triangular facet at each corner of the base, each of said triangular facets having an edge colinear with the edge of the adjacent corner facet of the girdle and an apex at said ridge.

4,118,950

BRILLIANTIZED STEP CUT STONE WITH FACETED CROWN

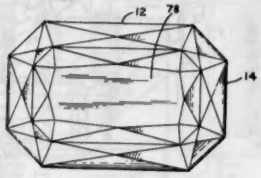
Henry Grossbard, 552 Beach 132nd St., Belle Harbor, N.Y. 11694

Continuation-in-part of Ser. No. 690,401, May 27, 1976, Pat. No. 4,020,649. This application Feb. 4, 1977, Ser. No. 765,834

The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.

Int. Cl.[2] A44C *17/00*

U.S. Cl. 63—32 **7 Claims**



1. A brilliantized step cut diamond comprising: a straight edged polygonal shaped girdle with a plurality of side facets and corner facets; a crown, said crown having a girdle break, a table break and a table, said table break and said girdle break being cut with triangular shaped facets; and a pyramidal base, said pyramidal base having a girdle break, a culet break, a point culet and a plurality of ridges, each of said ridges extending from said culet toward a corner, a fan of at least three pairs of triangular halves symmetrically disposed about each ridge of said pyramidal base, a kite shaped facet on each side of the base on the culet break and disposed between a pair of adjacent fans, and a shield shaped facet on each side of the base in the girdle break, each shield shaped facet having a base line parallel to the girdle and an apex in contact with a point of the associated kite shaped facet.

4,118,951

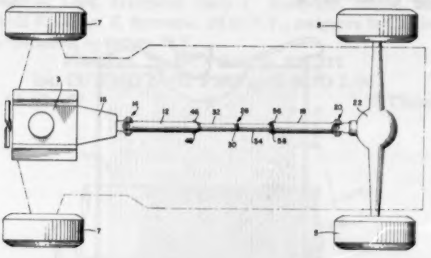
DRIVE UNIT FOR SELECTIVELY EFFECTING DRIVING OR FREE-WHEELING CONDITION OF PROPELLER SHAFTING

Leo B. Neasham, Rte. 2, Box 605L, Highlands, N.C. 28741

Filed Jul. 28, 1977, Ser. No. 820,069

Int. Cl.[2] F16C *1/06, 1/26*

U.S. Cl. 64—4 **10 Claims**



1. A propeller shaft arrangement for an automobile comprising:

(a) an input portion in driving relationship with a change-spaced transmission;

(b) an output portion spaced-apart from said input portion but in axial alignment therewith and in driving relationship with a differential transmission;

(c) and an intermediate unit or portion extending in axial alignment with said input portion and said output portion;

(d) said intermediate portion including an elongate first

member extending for at least the full distance between adjacent ends of said input portion and said output portion so that opposite ends of said first member are each partly coextensive with one of said input and output portions;

(e) said intermediate portion also including a second member and a third member wherein said second member is a bearing sleeve normally rigidly secured to said input portion and rotatable therewith, said third member is a bearing sleeve normally rigidly secured to said output portion, and rotatable therewith and said second and third members are structurally independent of each other;

(f) first means for selectively locking and unlocking said first member to and from said input portion and said second member;

(g) second means for selectively locking and unlocking said first member to and from said output portion and said third member whereby driving relationship is established between said input and output portions when said first and said second locking means are conditioned to lock said first member to both input portion and said output portion;

(h) bearing means in supporting relationship between said first and second members and between said first and third members to maintain proper alignment and to effect freewheeling relationship between said input and output portions when one of said first and second means is conditioned to unlock said input portion or said output portion from said first member.

4,118,952

FLEXIBLE JOINT FOR A POWER TRANSMISSION

Katsuyuki Kobayashi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jun. 4, 1976, Ser. No. 692,754
Claims priority, application Japan, Jun. 4, 1975, 50/67399
Int. Cl.[2] F16D *3/52, 3/60*
U.S. Cl. 64—12 **9 Claims**

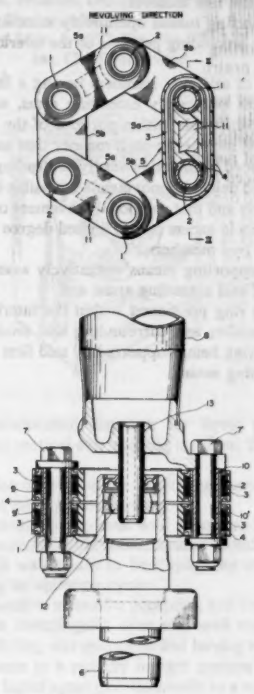
1. A flexible joint of interconnected elements for a power transmission, which comprises:

a plurality of first joint element means;

a plurality of second joint element means, each alternately arranged with respect to each of said first joint element means and interconnecting said first joint element means, each of said first joint element means and said second joint element means including adjacent bolt metal collars having elastic means wrapped thereabout and rubber or synthetic resin means disposed interiorly and exteriorly thereof;

bolt-hole metal sleeves disposed within said collars; and

means for increasing the compressive rigidity of said first joint element means embedded only within said rubber or synthetic resin means of said first joint element means so as



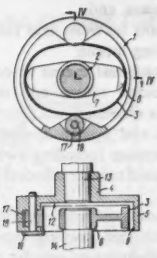
to effectively resist a compressive force acting thereon under acceleration conditions.

4,118,953

CENTRIFUGAL ELASTIC COUPLING

Antanas-Pyatras Kazimero Kavolelis; Bronislavas Prano Spruogis; Oleg Borisovich Turenko; Vladimir Vladimirovich Krupich; Valerienas Antano Sakalauskas, and Arunas Romualdo Yakshtas, all of Vilnjus, U.S.S.R., assignors to Vilnjussky Inzhenerno-Stroitelny Institut, Vilnjus, U.S.S.R.

Filed Dec. 29, 1976, Ser. No. 755,255
Int. Cl.[2] F16D *3/58, 3/14*
U.S. Cl. 64—12 **7 Claims**



1. A centrifugal elastic coupling formed of two members having facing ends interconnectable with each other, the members having a limited degree of movement therebetween, the coupling comprising:

a first of said two members having a hub-shaped facing end with a rim having an interior surface with two inwardly protruding portions, the rim defining an interior space within the first member;

first supporting means operatively associated with said inwardly protruding portions of the interior surface of said rim;

a second of said two members having a hub-shaped facing end with outwardly extending arms, said arms having ends positionable within portions of the interior space of said first member in such manner that said ends are radially spaced from said inwardly protruding portions so that a limited degree of movement is possible between said two members and that rotational movement of one of said two members in excess of said limited degree rotates the other of said two members;

second supporting means operatively associated with said ends of said extending arms; and

an elastic ring positioned within the interior space of said first member and surrounding said second member, the elastic ring being supported by said first and said second, supporting means.

4,118,954

MOTION COMPENSATOR

Charles J. Jenkins, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Aug. 24, 1976, Ser. No. 717,441
Int. Cl.[2] F16D *3/06*; E21B *17/00*
U.S. Cl. 64—23 **17 Claims**

1. A motion compensator comprising:

telescoping mandrel means including interconnected concentric outer tubular housing means and inner sleeve means;

tubular mandrel means disposed between said housing means and said sleeve means;

a pressure balancing seal system including:

first seal means between said tubular mandrel means and said sleeve means, and

second seal means between said tubular mandrel means and said housing means;

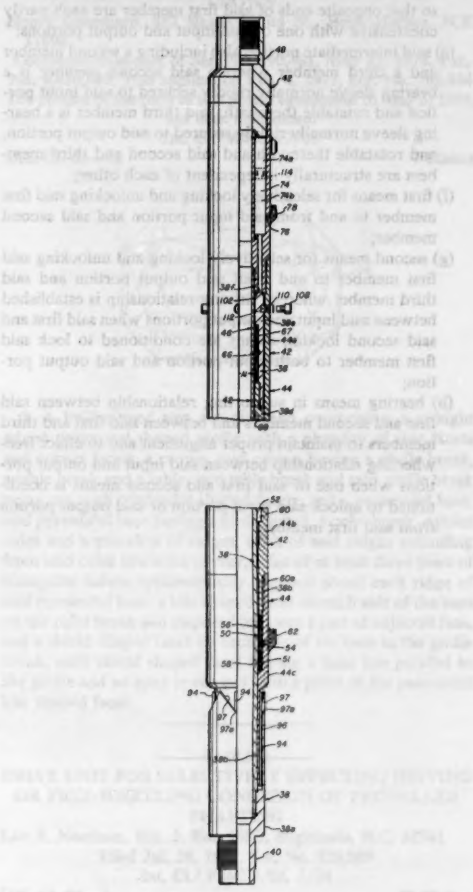
said first and second seal means in conjunction with said telescoping mandrel means and said tubular mandrel means defining a chamber;

an environmental seal system spaced from said pressure balancing seal system including two closely spaced seal means between said tubular mandrel means and said housing means;

said second seal means and said environmental seal system in conjunction with said housing means and said tubular mandrel means defining an annular cavity;

first port means through said housing means opening between said two spaced seal means of said environmental seal system permitting lubricant to be injected to said environmental seal system;

second port means through said housing means to said chamber permitting lubricant to be injected to said pressure balancing seal system; and



communicating means between said annular cavity and the bore of said sleeve means.

4,118,955

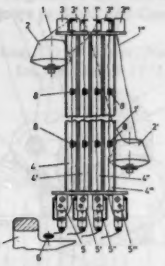
YARN FEED ARRANGEMENTS FOR KNITTING MACHINES

Hans Schieber, Bopfingen, and Winfried Lutz, Bopfingen-Flochberg, both of Germany, assignors to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Westhausen, Germany

Filed Oct. 18, 1977, Ser. No. 843,306
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1976, 2647187
Int. Cl.[2] D04B *35/12*
U.S. Cl. 66—158 **6 Claims**

1. A knitting machine comprising rotary carriage means, bobbin carrier means adapted to rotatably support a plurality of yarn bobbins and a yarn feed means for feeding yarns from bobbins rotatably supported on said carrier means to said carriage means, said yarn feed means comprising a plurality of

shields each adapted to extend only partially around a respective one of said yarns to protect said yarns from one another



and from air resistance, said shields comprising channels open in the direction of travel of said carriage means.

4,118,956

FABRIC PRINTING MACHINE

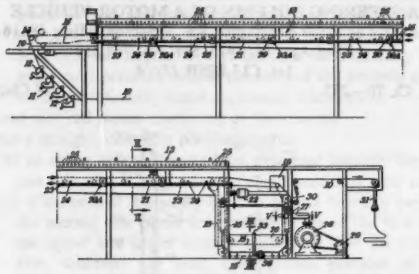
Nigel John William Stoyel, Longridge, near Preston, England, assignor to Stalwart Dyeing Company Limited, Clitheroe, England

Filed Aug. 30, 1977, Ser. No. 829,252

Claims priority, application United Kingdom, Sep. 6, 1976, 36882/76

Int. Cl.[2] D06B *21/00, 23/00*

U.S. Cl. 68—5 D **2 Claims**



1. A fabric printing machine, comprising a printing head, a steamer disposed beyond the printing head, a washer disposed beyond the steamer, said washer including a wash tank and a suction slot disposed beyond said wash tank, a pair of stenter chains operative to engage the edges of fabric advancing from the printing head and to drive it positively through said steamer, through said wash tank and past said suction slot, mountings for said stenter chains, means for adjusting said mountings to suit the lateral spacing of the stenter chains to the width of the fabric, means for injecting steam into the steamer, and means in the wash tank for circulating water through the fabric, said wash tank including a pipe for discharging water downwardly on to the fabric, a channel disposed beneath the path of travel of the fabric and having suction holes, a pump for circulating water between the pipe and the channel, a sealing strip for blanking off the suction holes in said channel outside the fabric, and guides for the sealing strip supported on said mountings and operative to displace the sealing strip, upon adjustment of the lateral spacing of the stenter chains so as to expose only the suction holes located between the stenter chains.

4,118,957

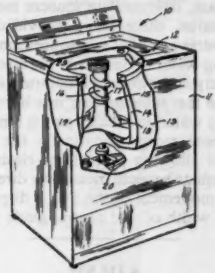
CENTRIFUGAL DISPENSER FOR WASHING MACHINE AGITATOR

Henry Marcussen, Fremont, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 4, 1977, Ser. No. 774,702

Int. Cl.[2] D06F *39/02*

U.S. Cl. 68—17 A **4 Claims**



1. An agitator-mounted dispenser for liquid agent for a non-reciprocating vertical-axis washing machine, the dispenser comprising:

a cup means for containing the liquid agent prior to a spin cycle of said machine and having,

an upwardly-sloping peripheral wall means, and

an apertured annular baffle means spaced radially inwardly adjacent said wall means to limit splashing of said liquid agent during an agitation cycle;

a discharge chamber means for accepting and holding liquid agent driven centrifugally over said wall means of said cup means during said spin cycle and having a plurality of drain apertures in a radially inward portion thereof for passing said liquid agent gravitationally to a washing zone of said machine at the end of said spin cycle, and

said discharge chamber means further comprising impeller vanes in a lower and radially-inward portion thereof and adjacent said drain apertures for directing said liquid agent during an early stage of said spin cycle away from said drain apertures.

4,118,958

WASHING MACHINES AND RINSING MACHINES

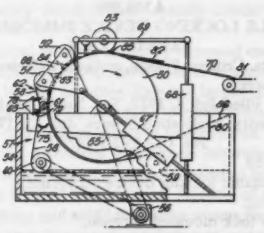
Maurice Charles Lemon, Leigh, and John Francis Spear, Holmbury St. Mary, both of England, assignors to Universal Towel Company, Sussex, England

Division of Ser. No. 677,436, Apr. 15, 1976, Pat. No. 4,083,206. This application Dec. 29, 1977, Ser. No. 865,442

Claims priority, application United Kingdom, Apr. 17, 1975, 15898/75

Int. Cl.[2] D06B *1/04*

U.S. Cl. 68—22 R **9 Claims**



1. A rinsing machine suitable for rinsing a washable dust mat comprising in succession first squeeze means, pressure means

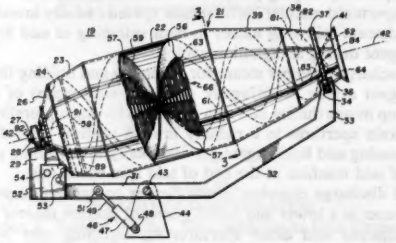
following the first squeeze means and at least one intermediate squeeze means between the first squeeze means and the pressure means, each successive squeeze means and pressure means extending transversely of the direction of movement of the mat and being spaced apart from each other longitudinally of the direction of movement of the mat, means for applying rinsing water onto the mat between the pressure means and the intermediate squeeze means, and central guide means of arcuate shape for feeding the mat along an arcuate path through the first squeeze means, intermediate squeeze means and pressure means in succession, there being provided means entirely within the transverse extent of said squeeze means for allowing part of the rinsing water to pass from the intermediate squeeze means successively in the direction contrary to the direction of movement of the mat whereby the mat is rinsed within each squeeze means by water of which a part is removed by the next succeeding squeeze means and finally the pressure means, which means for allowing part of the rinsing water to pass from the intermediate squeeze means in a direction contrary to the direction of movement of the mat is disposed at least partially within the width of said central guide means.

4,118,959

HIDE PROCESSING MACHINE AND METHOD

Richard G. Waite, Red Wing, Minn., assignor to S. B. Foot Tanning Company, Red Wing, Minn.

Filed Jun. 23, 1977, Ser. No. 809,099
Int. Cl.[2] C14C *15/00*
U.S. Cl. 69—30 **20 Claims**



1. In a hide processing machine having a hide-treating drum with a generally cylindrical body portion, a closed end and an open end, means supporting the drum for rotation about the central longitudinal axis of said body portion with said axis inclined to the horizontal to retain and tumble hides and treating fluid at the closed end of the drum, the improvement comprising helical partition means extending across the interior of the drum and spirally along the drum axis from said closed end toward the open end and effectively partitioning the drum into at least two longitudinally-extending spiral compartments, and said partition means having fluid-transmitting openings for free movement of treating fluid between such spiral compartments.

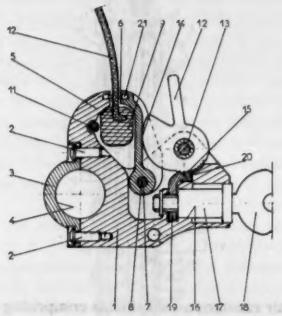
4,118,960

ADJUSTABLE LOCKING DEVICE IMMOBILIZED BY A SAFETY LOCK

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Jul. 8, 1977, Ser. No. 813,851
Claims priority, application France, Jul. 22, 1976, 76 22314
Int. Cl.[2] E05B *69/00*
U.S. Cl. 70—59 **5 Claims**

1. An adjustable locking device comprising:
(a) a housing,
(b) a safety lock mounted thereon,
(c) a movable part of said lock having a first toothed element,
(d) a second toothed element, to be immobilized by said lock, mounted on said housing, the teeth of said two toothed elements being in engagement when the lock is in its locking position, and



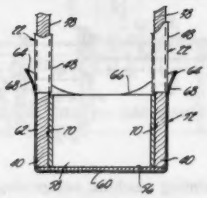
(e) a clamping element to be locked carried by the housing, wherein the second element comprises a pivoting lever provided with a cam profile interacting with the clamping element.

4,118,961

PROTECTIVE GUARD FOR AN IGNITION SWITCH ON A STEERING COLUMN OF A MOTOR VEHICLE

James D. Lee, 5360 Kensington Rd., Brighton, Mich. 48116

Filed Apr. 18, 1977, Ser. No. 788,319
Int. Cl.[2] E05B *17/14*
U.S. Cl. 70—237 **18 Claims**

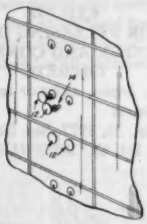


1. A protective guard for an ignition switch on a steering column of a motor vehicle comprising, a metallic one-piece generally cup shaped housing member having an end wall and a side wall and constructed and arranged to overlie and surround the ignition switch when the protective guard is mounted on the steering column, a metallic ring received in said cup shaped member and constructed and arranged to reinforce said side wall of said cup shaped member, and first and second loops of flexible metallic cable each having both of its ends received in said cup shaped housing member and secured to said ring and its bite constructed and arranged to provide an eye for receiving the shackle of a padlock therethrough, said flexible loops being constructed and arranged to extend in generally opposite directions around the steering column closely adjacent thereto when said housing member overlies and encircles the ignition switch and to receive the shackle of a padlock through said eyes of said loops such that when the padlock is locked the protective guard prevents unauthorized access to the ignition switch.

4,118,962
OBTURATOR FOR SAFE DEPOSIT BOXES AND THE LIKE

Mitchell L. Block, Highland Park, and Angelo Pane, Chicago, both of Ill., assignors to Block and Company, Inc., Wheeling, Ill.

Filed Aug. 17, 1977, Ser. No. 825,261
Int. Cl.[2] E05B *17/14*
U.S. Cl. 70—455 4 Claims



1. An obturator for safe deposit boxes and the like including substantially flat head means and elongated rail means cantilevered generally perpendicularly from one side of said head means, the improvement comprising in combination:

the rail means and the head means being integrally formed of a flexible material;

the rail means including a head end member and a distal end member;

the rail means comprising a plurality of elongated arms joined at said head end member and said distal end member;

the portion of at least one of said arms intermediate the ends being resiliently bent such that the arms lie in a common plane only at said head end member and said distal end member, whereby as the obturator is inserted into a keyhole of a safe deposit box or the like, the resiliently bent arms exert pressure against the sides of the keyhole channel and frictionally resist accidental withdrawal;

and said rail means consisting of three arms:

(a) a straight, centrally positioned arm;

(b) an upper arm resiliently bent to extend laterally beyond one side of the longitudinal plane of said first arm; and

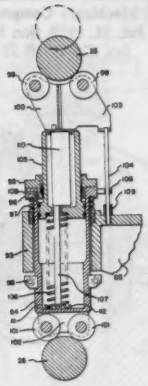
(c) a lower arm resiliently bent to extend laterally beyond the second side of the longitudinal plane of the first arm, the upper and lower arms being longer than the central arm, whereby the bent, intermediate portions of the longer arms exert oppositely directed lateral pressure within the keyhole.

4,118,963
CLOSED LOOP INTEGRATED GAUGE AND CROWN CONTROL FOR ROLLING MILLS

Werner E. Eibe, McCandless Township, Allegheny County, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.

Division of Ser. No. 746,848, Dec. 2, 1976, Pat. No. 4,054,043.
This application Jun. 22, 1977, Ser. No. 808,797
Int. Cl.[2] B21B *37/08*
U.S. Cl. 72—21 6 Claims

1. A transducer mounting comprising an upright housing open at top and bottom, a closed bottom casing slidably mounted within the housing, means positioned between the casing and housing urging axial separating movement therebetween, a transducer case slidably mounted within the casing, means positioned between the transduced case and the casing urging separating axial movement therebetween, said latter means comprising means for introducing a fluid under pressure therebetween, and also a compression coil spring disposed within the case, means affixed to the bottom of the casing and extending therebelow to contact a roll neck and means affixed

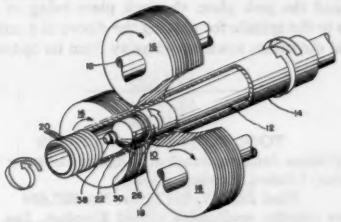


to the top of the transducer case and extending thereabove to contact a roll neck.

4,118,964
LUBRICATED MANDREL FOR A FINNING MACHINE

Robert A. Fusco, Portland, Me., assignor to General Electric Company, Schenectady, N.Y.

Filed May 18, 1977, Ser. No. 798,091
Int. Cl.[2] B21B *19/12;* B21D *37/18*
U.S. Cl. 72—43 4 Claims



1. For use with finning apparatus for rolling fins on a tubular member, said apparatus including spaced rotatable dies which cause rotation of a tubular member during finning operation and a stationary arbor which positions and aligns a tubular member being finned centrally with rotatable dies, a mandrel for rotatably supporting a tubular member being finned, said mandrel comprising:

(a) a stationary mandrel body axially mounted to a fixed arbor;

(b) a cylindrical bushing rotatably mounted on said mandrel body, longitudinally positionable in alignment with said dies, and having an outer diameter larger than the rest of said mandrel and substantially corresponding to the inner diameter of a tubular member being finned; and

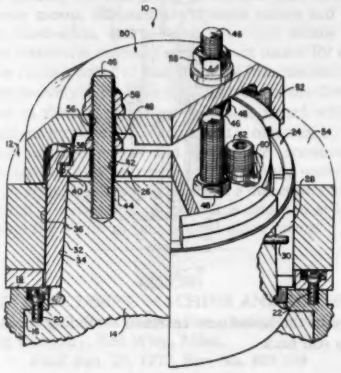
(c) means for providing lubrication between the contact surfaces of said bushing and said mandrel body to reduce rotational friction losses during rotation of said bushing;

(d) said bushing and said lubricating means facilitating rotation of the tubular member relative to said mandrel body during tube-finning operation without the generation of excessive heat or wear and with the expenditure of a minimum amount of mechanical work.

4,118,965
DIE MOUNTING ASSEMBLY FOR A PLANETARY WORK FORMING MACHINE

Edward Gregory Grohoski, Litchfield, Conn., assignor to The Hartford Special Machinery Company, Simsbury, Conn.

Filed Jul. 21, 1977, Ser. No. 817,668
Int. Cl.[2] B21B *31/02*
U.S. Cl. 72—102 8 Claims

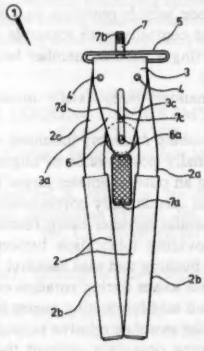


1. For quick and easy removable mounting of a circular die in precise concentric coaxial surrounding relation to a machine spindle, a die mounting assembly comprising a one-piece sleeve movable toward and away from an operating position in concentrically interposed wedged engagement between the spindle and the surrounding circular die for removing clearances therebetween, and selectively operable bi-directional displacement means including a jack plate and a releasable tongue and groove bayonet-type direct driving coupling between the sleeve and the jack plate, the jack plate being in overlying relation to the spindle for moving the sleeve as a unit in opposite axial directions toward and away from its operating position.

4,118,966
TOOL FOR WALL ANCHORS

Ewart William Jackson, Southall, England, assignor to Futters (London) Limited, London, England

Filed Jun. 17, 1977, Ser. No. 807,684
Claims priority, application United Kingdom, Jun. 17, 1976, 25233/76
Int. Cl.[2] B21J *15/34*
U.S. Cl. 72—114 17 Claims

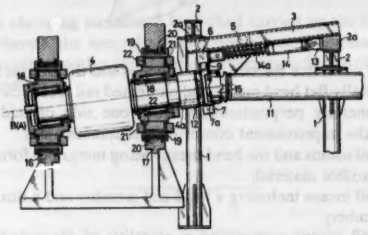


1. A tool which comprises:
a head;
a pair of elongate handles extending from the head, at least one of said handles being pivoted to the head and each handle having an elongate follower-abutting surface;
a profile follower for said surfaces, which follower moves linearly relative to the head in response to the handles being pressed together to sandwich the follower between their respective follower-abutting surfaces; and
an operating member movable with said follower.

4,118,967
APPARATUS FOR RELEASING DRIVE ASSEMBLY FROM ROLL NECK AND CONNECTING SAME THERETO

Hiroji Okuda, Nara, Japan, assignor to Koyo Seiko Company Limited, Osaka, Japan

Filed Jul. 25, 1977, Ser. No. 818,957
Int. Cl.[2] B21B *31/08*
U.S. Cl. 72—239 3 Claims



1. An apparatus for releasing drive assemblies from the necks of two working rolls which are arranged with their axes inclined and intersecting each other and connecting the drive assemblies to the roll necks, comprising:
two pairs of rails secured to posts and extending in parallel to the axes of the working rolls and having the same inclination angle as that of the axes of the working rolls in vertical direction, the rails of each pair facing each other,
two support members each slidably supported on each pair of the rails and each integral with a member for holding a coupling of the corresponding drive assembly in contact with the outer periphery of the coupling,
two holders each mounted on each of the support members and opposed to the coupling holding member, the holder being engageable with the outer periphery of the coupling to hold the coupling between the holding member, and the holder in pressing engagement therewith,
two means each mounted on each of the support members for operating the holder to cause the holder to hold the coupling in pressing engagement therewith, and
two means for slidingly moving each of the support members on the rails, including a cylinder secured at its one end to the upper member by a fixing member and having a piston rod connected at its forward end to each of the support members.

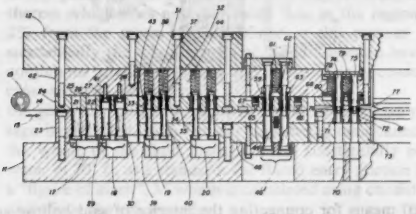
4,118,968
SELF CLEANING PROGRESSIVE FIN DIE WITH IMPROVED STRIPPING MEANS

Ward A. Ames, Danville, Ill., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Division of Ser. No. 623,101, Oct. 16, 1975, Pat. No. 3,995,469.
This application Jun. 18, 1976, Ser. No. 697,351
Int. Cl.[2] B21D *45/00*
U.S. Cl. 72—328 1 Claim

1. The combination of a stripper device with a die for forming a hole in a workpiece comprising:
a frame including a surface for supporting a workpiece and a ram movable to and from said surface;

a hollow bushing fixedly mounted to said frame;
a punch fixedly mounted to said frame and sized to force a portion of said workpiece in said bushing when said ram moves toward said surface;
a stripper rod mounted to said frame and being positioned within said bushing;
spring means engaged with said frame and said rod being operable to urge said rod through said bushing to force said portion of said workpiece therefrom as said ram moves away from said surface but being yieldable to allow said rod to withdraw within said bushing as said portion of said workpiece is forced into said bushing by said punch;
a plurality of punches mounted to said frame in a row with said punches arranged with decreasing diameters in said row;



a plurality of bushings mounted to said frame in a row opposite said punches with said bushings arranged with decreasing internal diameters to cooperatively with said punches form a bonnet in said workpiece of decreasing diamater as said bonnet is moved along said row and engaged successively by some of said punches and bushings;
a hollow pierce bushing mounted to said frame;
a pierce punch mounted to said frame being extendable through said workpiece and into said pierce bushing;
a stripper bushing slidably disposed around and encircling said pierce punch;
spring means engaged with said frame and said stripper bushing being operable to force said workpiece from said pierce punch as said pierce punch is withdrawn from said workpiece.

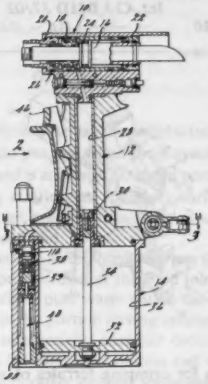
4,118,969

DOUBLE ACTION FASTENER INSTALLATION TOOL FOR BLIND RIVETS AND THE LIKE

Robert John Corbett, Saugerties, N.Y., assignor to Huck Manufacturing Company, Detroit, Mich.

Filed Jul. 27, 1977, Ser. No. 819,495
Int. Cl.[2] B21J *15/34*
U.S. Cl. 72—391 **2 Claims**

1. A fastener installation tool of the fluid actuated pull gun type comprising in combination,
a head assembly including a pull piston and a shift piston,
a handle and piston assembly including a hydraulic piston and an air piston directly connected thereto and trigger means for actuating a fluid circuit,
a cylinder assembly including an air cylinder for receiving said air piston and shift valve means,
said fluid circuit being constructed and arranged for the supply of fluid under pressure upon actuation of said trigger to first said pull piston to cause pulling of a fastener and upon a predetermined pressure build up cause said shift piston to move forward to set the fastener,
said shift valve being constructed and arranged in said circuit to be operable upon said predetermined pressure build up to cause said shift piston movement,
said fluid circuit including a trapped fluid circuit between the forward face of said shift piston and said shift valve,
and said shift valve including a ball valve held against a valve seat until said predetermined pressure is reached and arranged in said circuit to prevent shifting of said shift piston until unseated by said predetermined pressure, said trapped fluid circuit pressure responding to said pressure build up to unseat said ball valve and thereby relieve the trapped fluid pressure forward of said shift piston to permit said shift piston to move forward to set the fastener.

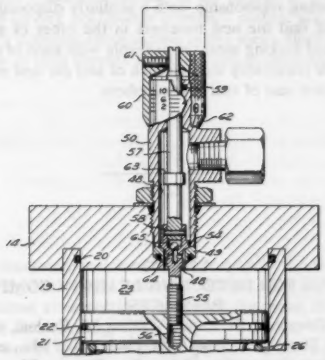


4,118,970

CRIMPING DIAMETER ADJUSTING VALVE

Hiralal V. Patel, Euclid, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Jul. 7, 1977, Ser. No. 813,534
Int. Cl.[2] B21J *9/12*
U.S. Cl. 72—402 **8 Claims**



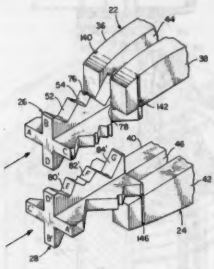
1. A crimping machine comprising a socket, a crimping die movable axially into and out of said socket, a cylinder, a piston axially movable in said cylinder for effecting said axial movement of said crimping die relative to said socket, said cylinder and said piston cooperatively defining a fluid pressure chamber, a pump, a passage hydraulically connecting said pump and said chamber, a valve member movable relative to said passage to close and open said passage, connecting means including a pin extending between said valve member and said piston maintaining a constant predetermined distance between said valve member and said piston, said connecting means connecting said valve member for axial movement with said piston, and adjusting means for altering said constant predetermined distance including a threaded connection between said pin and said piston.

4,118,971

CRIMPING APPARATUS

Hyman Izraeli, West Caldwell, N.J., assignor to David Teschner, Elizabeth, N.J.

Filed Sep. 27, 1977, Ser. No. 837,006
Int. Cl.[2] B21D *37/02*
U.S. Cl. 72—410 **19 Claims**



1. Apparatus for crimping ferrules of various sizes onto a conductor comprising: tool means having a pair of opposingly disposed jaw members joined to one another at a fulcrum, each jaw member being defined by spaced parallel sidewalls defining an elongate slotted opening therebetween, said jaw members being movable towards and away from one another; a pair of elongate die nest members, one for each of said jaw members, each of said die nest members comprising four arms extending radially outwardly from the central longitudinal axis of said die nest member along mutually perpendicular planes in cruciform relationship, each of said arms carrying at least one die nest, a first one of said arms of each of said die members being removably located in a respective one of said slotted openings in said jaw members, the arm opposite said first arm of one of said die nest members being arranged in coplanar opposed mating relationship with a similarly disposed arm of the other of said die nest members in the other of said jaw members; and locking means engageable with each of said jaw members for removably locking each of said die nest members to a respective one of said jaw members.

4,118,972

APPARATUS FOR DETECTING LEAKS IN COMPOSITE PACKAGES

Ronald R. Goeppner, St. Louis; William M. Kuehne, Chesterfield, and Timothy D. Russell, St. Louis, all of Mo., assignors to Container Corporation of America, Chicago, Ill.

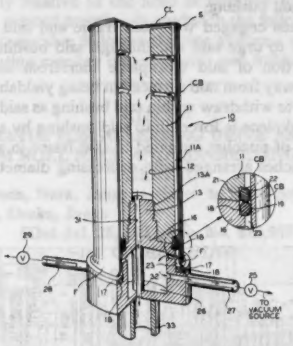
Filed Aug. 31, 1977, Ser. No. 829,567
Int. Cl.[2] G01M *3/32*
U.S. Cl. 73—40 **3 Claims**

1. In apparatus for testing leakage of a composite package:

(a) a hollow arbor for supporting a composite package including means for connecting the interior of said arbor to the interior of said composite package;

(b) a support for said arbor including a passageway therein connecting the interior of said arbor to means for placing pressure less than ambient on the interior of said composite package;

(c) said support being provided with a gasket sealing the open end of said composite package and with sealing means disposed axially of said gasket to define a chamber connected to a pressure less than ambient to enable the remainder of the interior of said package to be subjected to pressure less than ambient;



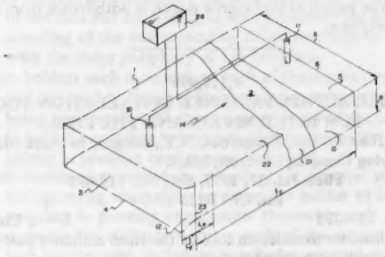
(d) means for connecting the interior of said hollow arbor and said composite package to means for measuring leakage in said composite package.

4,118,973

APPARATUS FOR MEASURING THE FLOW RATE AND/OR VISCOSITY OF A FLUID

Helen G. Tucker, Orleans; John W. Tanney, and William F. Hayes, both of Ottawa, all of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 6, 1977, Ser. No. 831,087
Claims priority, application United Kingdom, Sep. 6, 1976, 36828/76
Int. Cl.[2] G01N *11/04*; G01F *1/36*
U.S. Cl. 73—55 **11 Claims**



1. An apparatus for measuring the flow rate and/or viscosity of a fluid comprising:

a. a casing having a fluid passage, which is elongated in cross-section normal to the mean direction for fluid flow therein with two parallel, opposed major boundary surface portions which are parallel in a plane normal to the mean direction for fluid flow therebetween, the fluid passage comprising a flared entry portion and a portion having, in the mean direction for fluid flow therein, continuous boundary surface and a substantially constant cross-section, the flared entry portion being flared to decrease in width, without increasing in breadth, in the mean direction for fluid flow therein and forming an unobstructed flow path to the portion having, in the mean direction for fluid flow therein, a continuous boundary surface and a substantially constant cross-section, a fluid

inlet to the casing and forming a substantially unobstructed flow path for fluid to the whole of an inlet area to the flared entry portion of the fluid passage, said inlet area being normal to the mean direction for flow of fluid at an inlet end of the flared entry portion, and fluid outlet from the casing and forming a substantially unobstructed flow path for fluid from the whole area of an outlet end of the fluid passage said outlet area being normal to the mean direction for flow of fluid at the outlet end of the fluid passage, and wherein

b. the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein has a magnitude of mean breadth which is at least as large as that given by a mean breadth to mean width ratio of 1.5 to 1, and an area in any plane normal to the mean direction for fluid flow therein which does not vary more than in the region of 2% from the mean area calculated in this manner for substantially the whole length of the said portion having continuous boundary surface and a substantially constant cross-section, and wherein

c. the geometry of the flared entry portion of the fluid passage is such that, with laminar flow being maintained in the whole of the fluid passage, using substantially pure water at 70° F. as a standard, the flared entry portion has a "figure of merit", M which is calculated using consistent units from the relationship:

$$M = 1 - \frac{K_2 G_2}{\Delta E_2}$$

where,

G_2 = the mass flow rate of the substantially pure water through the fluid passage when the Reynolds number, R_e, is at least 2000 in the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein, and

the Reynolds number, R_e, in the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section is defined in consistent units by the relationship:

$$R_e = \frac{h\bar{U}\rho}{\mu}, \text{ where}$$

h = the width separating the parallel opposed major boundary surface portions, of the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein,

U = the mean velocity of the substantially pure water through the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein,

ρ = the density of the substantially pure water,

μ = the absolute viscosity of the substantially pure water,

ΔE_2 = a static pressure differential between the substantially pure water at or upstream of the fluid inlet to the casing and the substantially pure water within the fluid passage at a position within the portion having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein and where the flow rate is G_2 as previously defined immediately above and which is downstream of an outlet end of the flared entry portion by at least an amount L_e and is determined in consistent units by the relationship:

$L_e = 0.04\, R_e h$ when the Reynolds number, R_e, is that where the flow rate is G_2 as previously defined immediately above in the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein,

K_2 is a constant and is defined in consistent units by

$$K_2 = \frac{\Delta E_1 - \Delta E_2 \left(\frac{G_1}{G_2}\right)^2}{G_1 - \frac{(G_1)^2}{G_2}}, \text{ where}$$

G_1 = the mass flow rate of the substantially pure water through the fluid passage when the Reynolds number R_e is less than G_2 and is at least 1000 in the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein, and

ΔE_1 = a static pressure differential between the substantially pure water at or upstream of the fluid inlet to the casing and the substantially pure water within the fluid passage at a position within the portion having continuous boundary surface and a substantially constant cross-section in the mean direction for fluid flow therein and where the flow rate is G_1 as previously defined immediately above and which is downstream of the outlet end of the flared entry portion by at least an amount L_e as previously defined,

and where the flared entry portion "figure of merit", M, is within the limits determined by the relationship in consistent units:

$$M < 1.36 \frac{h}{d_h},$$

where

d_h = the hydraulic diameter of the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section in the mean direction for the flow of fluid therein, and is defined in consistent units by,

$$d_h = \frac{4A}{C},$$

where

A = cross-sectional area of the portion of the fluid passage having continuous boundary surface, and a substantially constant cross-section, normal to the mean direction for fluid flow therein,

C = wetted perimeter of the portion of the fluid passage having continuous boundary surface and a substantially constant cross-section, in a plane normal to the mean direction for fluid flow therein, and where

h is as previously defined, and

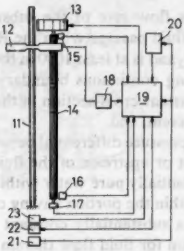
d. fluid pressure detecting means in the casing for detecting a fluid pressure differential in the fluid passage, between spaced positions in the mean direction for fluid flow therein, at least one of the positions being in the portion having continuous boundary surface and a substantially cross-section, whereby

e. at least one fluid characteristic to be measured, selected from the group consisting of flow rate and viscosity, is related to the pressure differential indicated by the fluid pressure detecting means and is deducible therefrom in a consistent manner for any given fluid when laminar flow is maintained in the whole of the fluid passage.

4,118,974
METHOD AND APPARATUS FOR MEASURING ERYTHROCYTE SEDIMENTATION RATE

Hiromi Nozaki, and Haruo Hara, both of Hachiohzi, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1977, Ser. No. 766,248
Claims priority, application Japan, Feb. 17, 1976, 51/16626
Int. Cl.[2] G01N *15/04, 33/16*
U.S. Cl. 73—61.4 6 Claims

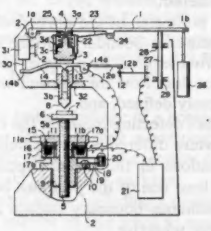


1. In a method of measuring a erythrocyte sedimentation rate of the type wherein the upper level of a blood sample contained in a vertical test tube is detected by a photoelectric detection unit, the red blood corpuscles in the blood sample are caused to sedimentate for a predetermined interval, and the upper level of the sedimentated red blood corpuscles is detected by descending said photoelectric detection unit along said test tube thereby determining the rate of the sedimentation of the red blood corpuscles, the improvement which comprises the steps of stopping said photoelectric detection unit a definite time after detection of the upper level of said blood sample, descending said photoelectric detection unit after said predetermined interval, detecting the interface between the blood serum and the sedimentated red blood corpuscles, measuring the rate of the sedimentation of the red blood corpuscles in terms of the difference between the position at which said photoelectric detection unit has stopped and the position of said photoelectric indicating detection of said interface.

4,118,975
LOADING SHAFT POSITIONING APPARATUS FOR HARDNESS TESTER

Shozo Iwasaki, Ebina, Japan, assignor to Kabushiki Kaisha Akashi Seisakusho, Japan

Filed Aug. 15, 1977, Ser. No. 824,701
Claims priority, application Japan, Dec. 16, 1976, 51/151159; Apr. 4, 1977, 52/38266
Int. Cl.[2] G01N *3/44*
U.S. Cl. 73—81 4 Claims



1. Semi-automatic loading shaft positioning apparatus for a hardness tester, comprising;

a frame;

a specimen supporting screw longitudinally movably fitted to the frame to longitudinally move, in use, a loading shaft by the supported specimen in one longitudinal direction for engaging the shaft with a loading lever swingably pivoted to the frame;

a manually rotatable nut threadedly connected with the screw for effecting the screw's and specimen's and thereby the shaft's longitudinal moving toward the shaft's engagement with the loading lever;

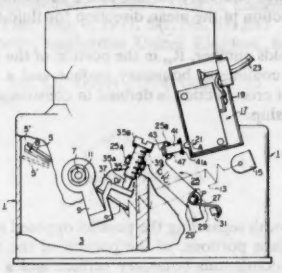
a detector for detecting the shaft's arrival at a given position in said longitudinal moving before said engagement; and

an electromagnetic unit mounted on the frame opposite the nut, having an electric circuit for energizing the unit when the detector detects said position, having a magnetic circuit which includes an armature connected with the nut to normally move therewith and, upon the energizing of the unit to stop movement thereof relative to the frame, thereby semiautomatically fixing the given position of the shaft, and having an electromagnet mounted on the frame for limited movement along the screw to effect the stopping in the given position of the shaft but to avoid applying a vertical magnetic force to the shaft when the shaft has been moved into contact with the specimen by the loading lever.

4,118,976
SWITCH DEVICE FOR DETECTING A POSITION OF A THROTTLE VALVE OF AN INTERNAL COMBUSTION ENGINE

Tadao Mitsuda, Susono; Takeru Yasuda, Nagoya, and Sigeru Okuda, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 12, 1977, Ser. No. 859,564
Claims priority, application Japan, Jun. 23, 1977, 52/073886
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—118 3 Claims



1. A switch device adapted for attaching to an air horn of a carburetor of an internal combustion engine for detecting a position of a throttle valve arranged in an intake air passageway formed in said air horn, said throttle valve having a pivot axis which is rotatably supported by said horn, said throttle valve being urged by a spring means so that said throttle valve can normally close off said intake air passageway, said switch device comprising:

a limit switch mounted on said air horn, said limit switch comprising an operating member displaceable for operating said limit switch, when an external force is applied to said operating member;

a first pusher member integrally secured to one end of said pivot axis of said throttle valve, said axis extending out of said air horn, so that said first pusher member is moved together with the movement of said throttle valve;

a lever member which is, on one end thereof, rotatably mounted to said air horn;

an abutment member mounted on a free end of said lever member remote from said one end, said lever member being urged by a spring so that said abutment member is always in contact with said first pusher member to cause

said lever member to be moved together with said throttle valve;

a second pusher member mounted on said free end of said lever member near to the abutment member, said second pusher member cooperable with said operating member of said limit switch in such a manner that said second pusher member is in contact with said operating member to cause said limit switch to be in operation when said lever member is rotated so that said second pusher member is moved toward said operating member due to the rotation of said throttle valve, and;

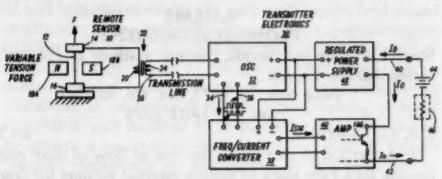
means for effecting the adjustment of a predetermined position of said throttle valve, said second pusher member being in touch with the operating member at said predetermined position to operate said limit switch.

4,118,977

ELECTRIC SIGNAL TRANSMITTER FOR VIBRATING-WIRE SENSOR

Everett O. Olsen, Wrentham; Donald C. Simpson, Norton, and David A. Richardson, Sheldonville, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Oct. 13, 1976, Ser. No. 732,129
Int. Cl.² G01L 1/10
U.S. Cl. 73—141 R **32 Claims**



1. Transmitter apparatus for use in an industrial process instrumentation system to produce a d-c measurement signal responsive to the vibration frequency of a vibrating-wire force-sensor the wire of which is tensioned in accordance with an unknown force; and wherein said d-c signal is connected through a two-wire line to a signal responsive load and a d-c source which furnishes over said two-wire line all of the power for said transmitter apparatus; said transmitter apparatus comprising:

a first pair of terminals to receive respective leads coupled to said vibrating wire;

a second pair of terminals connected respectively to the leads of said two-wire line to receive power from said d-c source and to carry the d-c measurement signal;

power supply means coupled to said second pair of terminals to develop at least one supply voltage;

electronic circuit means coupled to said first pair of terminals to produce vibratory movement of said wire at a frequency in accordance with the tension thereof and to develop an alternating signal corresponding to that frequency;

function-generating means responsive to said alternating signal and operable to produce a control signal which corresponds to a multiple function of the frequency of said alternating signal;

amplifier means having input and output circuits;

means coupling said control signal to said amplifier means input circuit;

means coupling said amplifier means output circuit to said second pair of terminals to control the d-c current flowing through those two terminals in accordance with the control signal applied to said input circuit;

a feedback signal coupling said output circuit of said amplifier means to said input circuit to establish correspondence between said control signal and the d-c current flowing in said two-wire output circuit; and

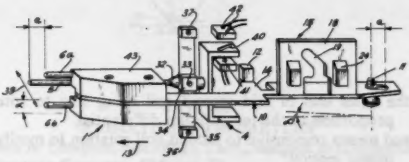
means coupling said power supply means to said electronic circuit means, to said function-generating means, an to said amplifier means, to furnish operating supply voltages thereto.

4,118,978

THREAD TENSION GAGE

Konrad Löwenheck, Basel, Switzerland, assignor to N. Civy & Cie, SA, Oberwil, Switzerland

Filed Aug. 22, 1977, Ser. No. 826,558
Claims priority, application Switzerland, Sep. 3, 1976, 11218/76
Int. Cl.² G01L 5/06
U.S. Cl. 73—144 **10 Claims**



1. A thread tension gage comprising:

(a) a support;

(b) a sensing head on said support including a sensing member and two guide members, said sensing and guide members having respective thread-engaging portions spaced from each other;

(c) manually operable moving means on said support for moving said portions of said guide members relative to said portion of the sensing member from a first position to a second position in a first direction and thereafter from said second position to a third position in a second direction;

(1) said portions of said sensing and guide members extending in a common plane is said second and third positions,

(2) said portions of said guide members defining a straight line therebetween when in said common plane, and said portion of said sensing member intersecting said line in said third position,

(3) said first direction being transverse to said plane,

(4) said portion of the sensing member being offset in said second direction from said straight line in said second position; and

(d) signal generating means on said support for generating a sensible signal indicative of a force exerted on said portion of said sensing member in said common plane transverse to said straight line.

4,118,979

THERMAL ENERGY METER

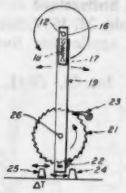
Mitchell D. Brody, 77 Gibbs St., Brookline, Mass. 02146

Filed May 31, 1977, Ser. No. 801,922
Int. Cl.² G01K 17/14
U.S. Cl. 73—193 R **8 Claims**

1. A system for measuring and registering an indication of the accumulated flow of thermal energy passing in a fluid line between a heat source and a heat sink, said system having a fluid flow responsive means which rotates a first shaft in proportion to volumetric fluid flow, and arm means responsive to said first shaft rotation, the improvement comprising a differential temperature sensing and responsive means for modifying the motion of said arm means in proportion to the sensed temperature differential, and accumulating and indicating the modified shaft rotation, said differential temperature sensing and responsive means comprising;

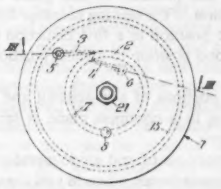
first and second temperature-deformable coils which are each independently in thermal equilibrium with the fluid

at different temperatures and each of which has an inner and outer end,
a common shaft,
means for holding the outer end of the first coil fixed,
means for spacedly supporting the inner ends of both coils to the common shaft,



the outer end of said second coil being free to rotate in proportion to the temperature differential,
and means responsive to second coil rotation to motify arm means motion.

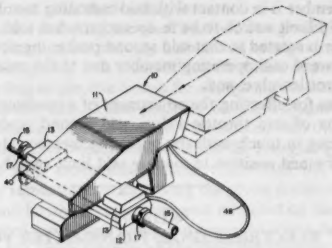
4,118,980
FLOWMETERS-VOLUMETERS
Alain Debeaux, Chatenay, France, assignor to Souriau et Cie, Boulogne-Billancourt, France
Filed Aug. 1, 1977, Ser. No. 820,745
Int. Cl.² G01F *3/08*
U.S. Cl. 73—194 C **7 Claims**



1. A flowmeter-volumeter of the type which counts the revolutions of a mobile ball in an annular channel into which a fluid inlet passage and a fluid exhaust passage open, comprising a first flange grooved with a revolution groove which comprises a first portion of said annular channel and grooved with one of said passages, a second flange grooved with a revolution groove which comprises a second portion of said annular channel and grooved with the other one of said passages, the opening of the exhaust passage being positioned above, in the direction of the ball displacement, the opening of the inlet passage and the gap between the closest edges of said openings being less than one diameter of the ball, and fastening means connecting the flanges together and constructed and arranged for allowing a rotation displacement relative to each other, in order to be able to adjust with precision the distance between the openings through which both passages open into the channel.

4,118,981
FLOWMETER
Ellis K. Cave, Garland, Tex., assignor to Arcadia Refining Company, Tyler, Tex.
Filed Jun. 24, 1977, Ser. No. 809,920
Int. Cl.² G01F *1/58*
U.S. Cl. 73—194 EM **6 Claims**

6. A method of measuring the rate of fluid flow comprising positioning a pair of electrical probes in said fluid flow sapced along a line extending transversely to the direction of said fluid flow, moving a magnetic field generating means from a position remote from said probes to a predetermined position proximate to said probes in which the magnetic field produced by said magnetic field generating means is applied to said fluid flow at the position of said probes transversely to the direction of said fluid flow and to the direction of said line, measuring

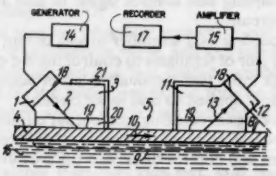


the voltage produced across said probes immediately prior to arrival of said magnetic field at said predetermined position and measuring the voltage produced across said probes immediately after the arrival of said magnetic field at said predetermined position.

4,118,982
FLOW MEASUREMENT
Steve Elia Souwand, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada
Filed Nov. 15, 1977, Ser. No. 851,707
Int. Cl.² G01F *1/70*
U.S. Cl. 73—194 R **6 Claims**

1. A method of measuring the rate of flow of fluid material passing up a flare stack of known internal volume for combustion at the uppermost end thereof, wherein an aqueous solution is injected in fine particle form into the fluid material at a point near the base of said flare stack, said aqueous solution containing an inorganic salt which generates a characteristic color in the flame when excited by the heat of combustion of the fluid material, the elapsed time is measured from the time of injection of said aqueous solution to the time of initial generation of said characteristic color in the flame at the uppermost end of the flare stack, and the rate of flow is calculated from the known internal volume of the flare stack and the measured elapsed time.

4,118,983
METHOD OF AND DEVICE FOR CONTROLLING GAS-LIQUID OR LIQUID-LIQUID INTERFACE IN MONOLAYER RESERVOIRS
Nikolai Ivanovich Brazhnikov, I ulitsa Bebelya, 3, korpus 11, kv. 48, Moscow, U.S.S.R.
Filed Jul. 29, 1976, Ser. No. 709,805
Claims priority, application U.S.S.R., Aug. 4, 1975, 2160657; Aug. 4, 1975, 2162829; Aug. 11, 1975, 2161351; Aug. 11, 1975, 2165624
Int. Cl.² G01F *23/28*
U.S. Cl. 73—290 V **35 Claims**



14. A device for controlling gas-liquid or liquid-liquid inter-

face in monolayer reservoirs, comprising: an emitter of a wave of acoustic vibrations mounted outside said monolayer reservoir on a section of its wall thereof; a receiver of an acoustic wave also mounted outside said monolayer reservoir on said section of said wall and spaced from said emitter and in the path of said wave of acoustic vibrations from said emitter, said emitter and receiver having effective areas; two sound conductors for respectively mounting said emitter of a wave of acoustic vibrations and said receiver of an acoustic wave on said section of said wall of said monolayer reservoir, said sound conductors having effective areas rigidly connected within the corresponding effective areas of said emitter and receiver of an acoustic wave, said sound conductors having contact areas contacting said wall within said section and making angles θ with said effective areas of said sound conductors, said angles θ being determined from the relationship:

$$\theta = \text{arc sin } (C_3/C),$$

where C_3 is the velocity of propagation of said acoustic waves in said sound conductors, and

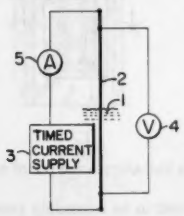
C is the velocity of propagation of mechanical vibrations, excited by said wave of acoustic vibrations, along said wall of said monolayer reservoir, said sound conductors being made of a material wherein the velocity C_3 of propagation of said acoustic waves is less than the velocity C of propagation of said mechanical vibrations along said wall of said monolayer reservoir, said wall section and sound conductors being generally disposed in a desired region relative to the position of the interface to be monitored or controlled; a generator of electric oscillations having an output coupled to said emitter of said wave of acoustic vibrations; an amplifier of electric signals having an input coupled to said receiver of an acoustic wave and having an output; a recorder of the amplitude of electric signals coupled electrically to said output of said amplifier of electric signals, this amplitude being used for ascertaining said gas-liquid or liquid-liquid interface.

4,118,984

LIQUID LEVEL INDICATOR FOR AN EXTREMELY LOW TEMPERATURE-LIQUEFIED GAS EMPLOYING A SUPERCONDUCTOR WIRE

Yasuo Kuraoka; Astushi Kurosawa; Tetsuo Shirai, and Katsuro Saito, all of Sapporo, Japan, assignors to Hoxan Co., Ltd., Sapporo, Japan

Filed Aug. 29, 1977, Ser. No. 828,678
Int. Cl.[2] G01F *23/24*
U.S. Cl. 73—295 **4 Claims**



1. A liquid level indicator for an extremely low temperature-liquefied gas, comprising:

a superconductor wire which has terminals and which is immersed in the extremely low temperature-liquefied gas,

a voltmeter which is connected to the terminals of said superconductor wire so as to measure a voltage across said terminals, and

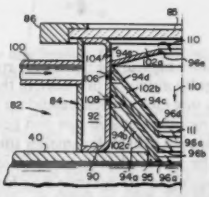
a current supply portion which is connected to said superconductor wire and which, at first, increases a current to be fed to said superconductor wire up to a plateau region in a current — voltage hysteresis curve of said superconductor wire, and thereafter, decreases it down to a return-path rectilinear region in the curve departing from the plateau region, a liquid level of said liquefied gas being gauged on the basis of the measured value of the terminal voltage of said superconductor wire as obtained by the use of the decreased current.

4,118,985

RADIATION PYROMETERS

William A. Compton, San Diego, Calif., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 501,988, Aug. 30, 1974, Pat. No. 4,037,473, which is a continuation of Ser. No. 181,157, Sep. 16, 1971, abandoned. This application Nov. 30, 1976, Ser. No. 746,243
Int. Cl.[2] G01J *5/04*
U.S. Cl. 73—346 **2 Claims**

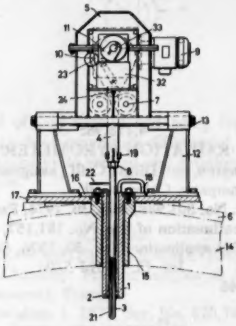


1. Temperature measuring apparatus comprising detector means for generating an electrical signal having a magnitude proportional to the intensity of radiant energy impinging thereon; means for conducting radiant energy from a body subjected to temperature measurement to said detector means including an optical component adapted to lie in the optical path between said body and said detector means, said component being capable of transmitting radiant energy impinging thereon; and means adapted to be interposed between the optical component and the body subjected to temperature measurement for keeping foreign material from collecting on said component, said last-mentioned means comprising a housing surrounding said optical component; interface means in said housing adjacent said optical component for keeping foreign material from reaching said component; means in said housing on the opposite side of said last-mentioned means from said optical component providing an annular plenum; means providing an inlet to said housing and to said plenum; means providing outlets through which fluid can flow from said plenum into said housing; a first baffle means in said housing for directing fluid exiting through said outlets across said interface means to keep foreign material from collecting thereon, said first baffle means having an aperture through which radiant energy can pass to said interface means; means providing a fluid outlet from said housing along the optical path through which energy emitted from the body subjected to temperature measurement can pass; and a second baffle means in said housing for directing fluid exiting from said plenum first into entraining relationship with the fluid directed across said interface means and then through the outlet from the housing, said second baffle means also being apertured so that radiant energy can pass therethrough to said interface means.

4,118,986
TEMPERATURE MEASURING DEVICE FOR ROTARY KILNS

Dietrich Werner, Messel; Konrad Schymura, Oberursel; Hans Georgi, Bad Homburg; Walter Pech, Wiesbaden, and Wilhelm Lange, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jun. 8, 1977, Ser. No. 804,836
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1976, 2626938
Int. Cl.[2] G01K *13/02, 13/08*
U.S. Cl. 73—351 5 Claims



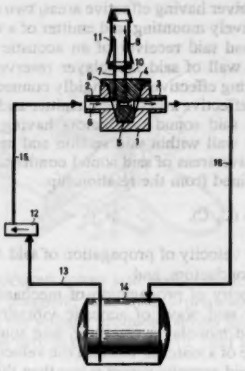
1. A temperature measuring device for rotary kilns, comprising: a sleeve rigidly mounted in a bore in the shell of the rotary kiln and having one end portion extending into the rotary kiln, a ceramic ring mounted at said one end portion and having an inner opening having a diameter smaller than that of the sleeve, a protective tube received in the sleeve and closely received through the opening in the ceramic ring for sliding movement, wherein the tube is guided to avoid contact with the sleeve, a thermocouple disposed in the protective tube at one end portion thereof corresponding to said one end portion of the sleeve, means mounted on the outside of the shell and disposed directly above the opening in the ceramic ring and the sleeve for lifting and lowering the protective tube to effect the cleaning thereof comprising a rod secured to the other end portion of the protective tube, means coaxially guiding the tube in the lifting and lowering means with respect to the opening of the ceramic ring, and means controlling the lowering and lifting means to first lower the rod so that the protective tube can knock off dirt on the ceramic ring, to then lift the rod so that the one end portion of the protective tube is retracted until the end thereof is disposed in the ceramic ring and lastly lower the rod to such an extent that the one end portion of the protective tube protrudes from the ceramic ring to effect measurement.

4,118,987
DEVICE FOR TAKING LIQUID SAMPLES

Horst Zeh, Karlsruhe, Fed. Rep. of Germany, assignor to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen mbH, Eggenstein-Leopoldshafen, Fed. Rep. of Germany

Filed Apr. 6, 1977, Ser. No. 785,182
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614787
Int. Cl.[2] G01N *1/20*
U.S. Cl. 73—422 R 6 Claims

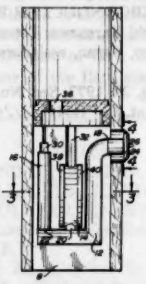
1. In a device for taking liquid samples from a liquid circuit, including a needle head housing provided with a throughgoing flow passage having inlet and outlet ports and arranged to be inserted in the liquid circuit to provide liquid flow through the flow passage; pressure reducing means arranged between the passage inlet and the passage outlet for generating a pressure drop of the liquid in the passage; and two spaced hollow needles supported in the needle head housing; each needle having a first and a second end; the first needle ends communicating with the passage at locations where different fluid pressures prevail during operation; the second needle ends being insertable into a sampling vessel; the improvement wherein said needle head housing is formed of an outer component containing one part of said passage including said inlet and said outlet ports and an inner component including means for releasably attaching said inner component to said outer component; said inner component containing the other part of said passage, said pressure reducing means and said hollow needles.



4,118,988
BOTTOM FILL SAMPLING APPARATUS

Joseph J. Boron, Medina, Ohio, assignor to Rossborough Manufacturing Co., Cleveland, Ohio

Filed Aug. 19, 1977, Ser. No. 826,186
Int. Cl.[2] G01N *1/12*
U.S. Cl. 73—425.4 R 1 Claim



1. An apparatus for taking a sample of molten metal comprising:

a housing adapted to be releasably secured to a lance;

a body within the housing defining a mold cavity;

said body and housing defining a molten metal flow path having an entrance and an exit, said body further defining a waste receptacle in communication with said cavity;

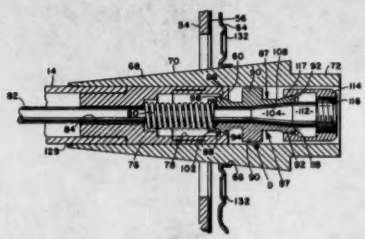
a protective member over the entrance of said flow path, said member being comprised of material substantially similar in chemical analysis to that of the desired final analysis of the molten metal being sampled;

said flow path entering said body and housing from the side and communicating with said mold cavity at the lower end thereof when said apparatus is oriented in its position of use.

4,118,989
LOCKING MECHANISM

Ralph R. Wood, Florissant, Mo., assignor to Wyle Laboratories, El Segundo, Calif.

Filed Feb. 22, 1977, Ser. No. 770,916
Int. Cl.[2] G01M *1/02*
U.S. Cl. 73—487 17 Claims

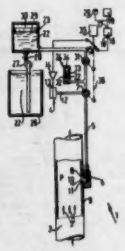


1. A locking mechanism comprising: a hollow shaft having a terminal end; expandable means carried by said shaft axially outwardly of said terminal end for movement relative to said shaft radially and axially; and, expanding means carried by said shaft for axial movement relative to said shaft and said expandable means independently of movement of said shaft, said expanding means being movable axially in one direction relative to said shaft and expandable means while said shaft is stationary for outwardly expanding said expandable means, and said expanding means and expand able means being movable in unison in said one direction relative to said shaft while said shaft is stationary for locating a device held by said expandable means in a desired axial position relative to said shaft.

4,118,990
METHOD AND DEVICE FOR MEASURING A PRESSURE IN A SUSPENSION CONDUIT

Gerrit Hendrik van Zeggelaar, Utrecht, Netherlands, assignor to Bagger en Grond (Amsterdam Ballast Dredging) Ballast-Nedam Groep N. V. and Amsterdamse Ballast B.V., Amstelveen, Netherlands

Filed Apr. 12, 1977, Ser. No. 786,958
Int. Cl.[2] G01L *7/00*
U.S. Cl. 73—714 24 Claims



1. In a suspension conveying system including a suspension conduit having a pressure sensing chamber formed in a wall portion thereof, the combination of:

a nozzle passage opening into said pressure sensing chamber and a duct connected to said passage;

rinsing means for supplying liquid under sufficient pressure to overcome the pressure in said conduit;

pressure-sensing means for sensing pressure in said conduit through said duct;

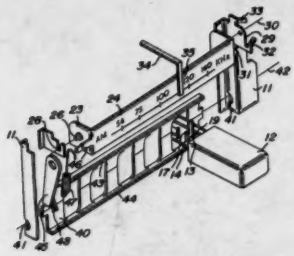
recording and/or indicating means connected to said pressure-sensing means for recording and/or indicating the pressure sensed by said pressure-sensing means; and

control means for periodically connecting said rinsing means to said nozzle passage through said duct for time durations each of which is small in comparison with the control period.

4,118,991
TUNING DISPLAY MECHANISM FOR MULTIBAND PUSHBUTTON TUNABLE RECEIVER

Louis Albert Bevacqua, Des Plaines, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Dec. 30, 1976, Ser. No. 755,702
Int. Cl.[2] F16H *35/18*
U.S. Cl. 74—10.33 17 Claims



1. A tuning display mechanism for a mutliband pushbutton tunable receiver, including in combination:

a receiver with a chassis;

a plurality of manually slidably actuatable pushbutton tuning assemblies each coupled to said chassis for tuning said receiver to predetermined frequencies in any of a plurality of frequency wavebands upon manual actuation;

cam means, mounted to each of said puchbutton tuning assemblies for slidable movement therewith during actuation, for predesignating each of said pushbutton tuning assemblies for tuning said receiver to the frequencies in one of said plurality of different frequency wavebands; and

tuning display means coupled to said chassis and capable of selectively displaying longitudinal extending scales corresponding to each of said plurality of frequency wavebands, each of said predesignating cam means positioned for selectively engaging a portion of said tuning display means upon manual sliding actuation of the one of said pushbutton assemblies carrying said cam means to select and display the longitudinally extending scale corresponding to the waveband to which said manually actuated pushbutton assembly has been predesignated to.

4,118,992
CLUTCH MECHANISM FOR PUSH-BUTTON TUNER

Hiroaki Yamagishi, Ueda, Japan, assignor to Ono Seiko Co., Ltd., Tokyo, Japan

Filed Apr. 12, 1977, Ser. No. 786,943
Claims priority, application Japan, Apr. 17, 1977, 51-43978
Int. Cl.[2] F16H *35/18*; F16D *13/50*
U.S. Cl. 74—10.33 6 Claims

1. In a push-button type tuner of the type including plural push buttons operatively supported in a frame, wherein cores are shiftable with respect to core bodies to achieve a variation in inductance, and wherein the varied position of a core may be maintained, the improvement of a clutch mechanism comprising:

a lever plate having a first end tiltably secured to a side plate of said frame and a second end having a cam edge, said lever plate having an opening therein;

a treadle bar assembly mounted within said frame and hav-

ing a first shaft extending through said side plate toward said lever plate;

a gear wheel rotatably fitted about said first shaft;

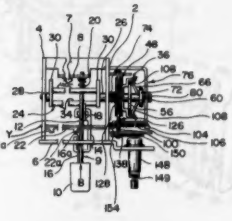
a clutch lever support fixedly connected to said gear wheel to be rotatable about said first shaft;

a manual tuning mechanism including a worm gear shaft having a worm gear meshing with said gear wheel for rotating said gear wheel and thus said clutch lever support;

a second shaft having a first end extending through said opening in said lever plate and a second end secured to said first shaft;

a disc fixedly positioned between said first shaft and said second end of said second shaft;

plural clutch levers having first ends retained in said clutch lever support and second ends embracing said second shaft, said clutch levers having apex portions contacting said disc;



a collar slidably positioned on said second shaft in contact with said second ends of said clutch levers;

spring means, connected between said side plate and said second end of said lever plate, for urging said second end of said lever plate to tilt about said first end thereof toward said side plate and to press against said collar, for thereby pressing said collar against said clutch levers, for thereby pressing said clutch levers against said disc, and for thereby pressing said disc against said clutch lever support, thus providing a clutching operation; and

a rotary member pivotally supported in said frame, said rotary member having an L-shaped projection on an end thereof adjacent said cam edge of said second end of said lever plate, such that depression of one of said push buttons pivots said rotary member such that said L-shaped projection pushes against said cam edge and pivots said lever plate away from said side plate against the biasing force of said spring means, thus providing a declutching operation.

4,118,993

MECHANISM FOR CONVERTING ROTARY MOTION INTO LINEAR RECIPROCATING MOTION

Noriomi Miyoshi, and Michihiko Tsuruoka, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 17, 1977, Ser. No. 778,540

Int. Cl.[2] F16H *19/06*

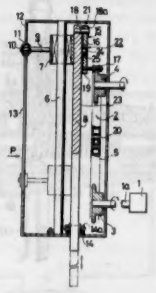
U.S. Cl. 74—37 **7 Claims**

1. In a mechanism for converting rotary motion into linear reciprocating motion including a drive sprocket, a driven sprocket spaced therefrom, an endless chain coupled between said drive and driven sprockets, a rotary power source operatively coupled to said drive sprocket, a guide bar disposed parallel to the linear runs of said chain, a slide member slidably engaged with said guide bar, and means for coupling said chain member with said slide member, the improvement characterized by:

(a) said guide bar being spaced from the plane of said chain,

(b) an elongated output rod secured to said slide member,

(c) said coupling means comprising an elongated connecting rod, first means pivotally coupling one end of said connecting rod to said chain, second means pivotally coupling the other end of said connecting rod to said output rod, roller means spaced from said second means on said connecting rod for providing a rolling contact between said connecting rod and said output rod, and



(d) means for preventing the rotation of said slide member about said guide bar.

4,118,994

MOVABLE DEVICE FOR GENERATING ACOUSTIC SHEAR WAVES IN THE EARTH

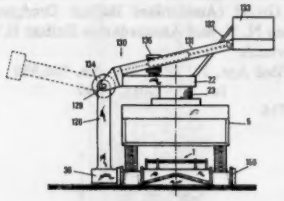
Pierre-Claude Layotte, Les Mathes, and Jacques Cholet, L'Etang-la-Ville, both of France, assignors to Institut Francais de Petrole, France

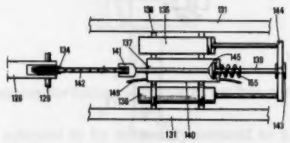
Continuation-in-part of Ser. No. 724,383, Sep. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 589,676, Jun. 24, 1975, Pat. No. 4,050,540. This application Apr. 15, 1977, Ser. No. 787,879

Claims priority, application France, Sep. 23, 1975, 75 29470; Jun. 27, 1974, 74 22569

Int. Cl.[2] F16H *33/00*

U.S. Cl. 74—61 **9 Claims**





1. A device for generating shear waves in the earth comprising a target-member having a surface of contact with the earth, a mass for striking the target-member and means for imparting to said mass a speed having a component parallel to said contact surface, including movable actuating members, orientable with respect to the target-member, for maintaining the mass in a plane containing the target-member and control means for lifting the mass above the target-member and orienting its fall towards the target-member, and wherein the means for moving the mass by pivoting an elongate rigid member with respect to the support member comprises a toothed wheel

solid with the elongate rigid member and pivotable with respect to said support member, a chain in mesh with said toothed wheel and actuated by driving means solid with the support member, said support member being provided with a counterweight on the side opposite to the elongate rigid member.

4,118,995

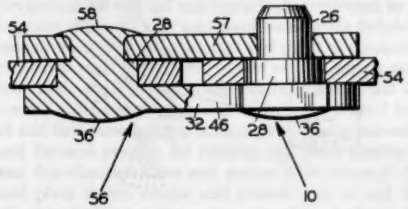
INTEGRAL TIE STRAP AND RIVET ASSEMBLIES FOR SAW CHAINS

Donald D. Lanz, and Ronald E. Hencye, both of Oregon City, Oreg., assignors to Omark Industries, Inc., Portland, Oreg.

Division of Ser. No. 733,258, Oct. 18, 1976, Pat. No. 4,037,403, which is a continuation-in-part of Ser. No. 613,168, Sep. 15, 1975, abandoned. This application Apr. 11, 1977, Ser. No. 786,095

Int. Cl.[2] F16G *13/04*

U.S. Cl. 74—245 S **1 Claim**



1. A saw chain assembly comprising: a repetitive sequence of a center link pivotally connected to a pair of side links, a solid cylindrical postlike protrusion having inner and outer end cylindrical portions extended from one of said side links and extended through the center link and then the other side link, said cylindrical postlike protrusion being extruded metal formed from the side link material to provide integral attachment thereto, said cylindrical postlike protrusion having its inner cylindrical portion forming a cylindrical being surface normal to the side link and being relatively larger in diameter than the outer cylindrical end portion, said inner cylindrical bearing portion nested within and extended through the aligned opening of the center link and providing the bearing surface on which the center link is pivoted, and the outer cylindrical end portion forming a shoulder with said inner cylindrical bearing portion and protruded through the aligned opening on the other side link with the protruded end headed to prevent removal, said opening of the other side link being smaller in diameter than the diameter of the cylindrical inner bearing portion of the protrusion and the other side link being abuted against the shoulder so that the length of said inner bearing portion establishes a spacing between the pair of side links, the length of the inner bearing portion being greater than the center link thickness and said spacing and said inner bearing surface normal to the side link thereby providing free pivoting of the center link relative to the side links.

4,118,996

REVERSING GEAR IN PARTICULAR FOR A Z-DRIVE FOR WATERCRAFTS

Johann Eichinger, Putzbrunn, Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed Mar. 16, 1977, Ser. No. 778,152

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1976, 2614845

Int. Cl.[2] F16H *57/00;* **B63B** *35/30;* **F16D** *11/06, 21/02*

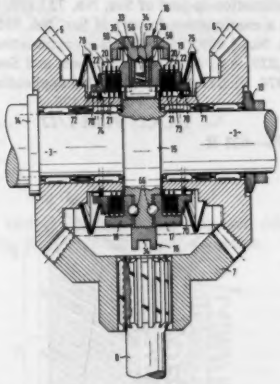
U.S. Cl. 74—404 **2 Claims**

1. A reversing gear arrangement, comprising:

an input shaft;

axially spaced first and second bevel gears relatively rotatably mounted on said input shaft and with respect to each other and means for preventing a relative axial movement between said first and second bevel gears, said first and second bevel gears each having a common first cone center coincident with the axis of rotation of said input shaft;

a third bevel gear drivingly coupled to both of said first and second bevel gears, said third bevel gear having a second cone center coincident with said first cone center so that said first, second and third bevel gears define a U-shaped arrangement;



double clutch means positioned within said U-shaped arrangement defined by said first, second and third bevel gears for selectively drivingly coupling either one of said first and second bevel gears to said input shaft;

an output shaft fixedly secured to said third bevel gear; and

torque limiting means on said double clutch means and positioned within said U-shaped arrangement for limiting the magnitude of torque transmitted between the driven one of said first and second bevel gears and said third bevel gear.

4,118,997

BEVEL GEARING

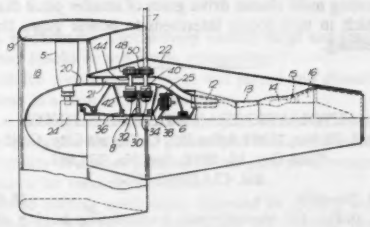
Clifford Stanley Woodward, Bristol, and David Roberts McMurtry, Wotton-under-Edge, both of England, assignors to Rolls-Royce Limited, England

Filed Aug. 15, 1977, Ser. No. 824,617

Claims priority, application United Kingdom, Aug. 14, 1976, 33910/76

Int. Cl.[2] F16H *1/14, 37/06*

U.S. Cl. 74—417 **6 Claims**



1. A bevel gearing assembly comprising a first shaft, a main bevel gear connected to the first shaft and having two circumferentially extending rows of teeth facing in opposite axial directions, and two secondary bevel gears meshing respectively with the two rows of teeth on the main bevel gear, the two secondary bevel gears being coupled to drive a second

shaft the axis of which lies at an angle to the axis of the first shaft.

4,118,998

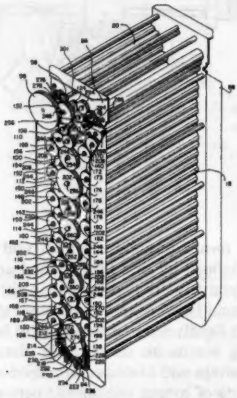
TRANSPORT ROLLER RACK

Henry F. Hope, 3192 Huntingdon Rd., Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2548 Wyandotte Rd., Willow Grove, Pa. 19090

Continuation-in-part of Ser. No. 780,922, Mar. 24, 1977, which is a continuation-in-part of Ser. No. 737,199, Oct. 29, 1976, which is a continuation-in-part of Ser. No. 555,961, Mar. 10, 1975, Pat. No. 3,989,176, which is a continuation-in-part of Ser. No. 457,829, Apr. 4, 1974, abandoned, and Ser. No. 513,244, Oct. 9, 1974, Pat. No. 3,952,610. This application Jul. 26, 1977, Ser. No. 819,126

Int. Cl.[2] F16H *1/12*

U.S. Cl. 74—421 R **21 Claims**



1. A transport roller rack for transporting webs, such as photographic films, comprising:

a plurality of transport rollers positioned in a staggered pattern without forming nips, each roller having a roller driving gear at its end, and alternate pairs of adjacent rollers rotating in the same direction having their driving gears at opposite sides of the rack and in mesh with each other,

a plurality of intermediate power gears of larger pitch diameter than the roller driving gears driving each other by meshing, selected ones of the intermediate power gears coaxially rotating selected ones of the roller driving gears in different pairs, and

a plurality of main power gears driving each other through meshing, selected ones of said main power gears coaxially rotating main cluster drive gears of smaller pitch diameter which in turn rotate intermediate power gears through meshing.

4,118,999

AUTOMATIC TRANSMISSION SHIFTER

William J. Bieber, 21901 Adler Dr., California City, Calif. 93505

Filed Oct. 15, 1976, Ser. No. 732,881

Int. Cl.[2] G05G *7/08*

U.S. Cl. 74—475 **18 Claims**

1. A shifter for an automatic transmission having at least first, second and third speed ranges, said shifter comprising:

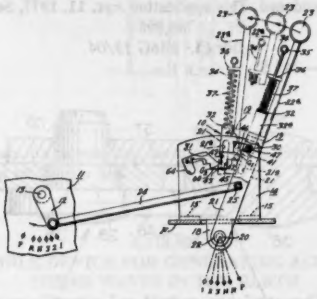
a frame means adapted to be mounted in a vehicle;

a handle mounted to said frame means for pivotal movement about an axis between first, second and third positions corresponding to said first, second and third speed ranges;

selector pin means moveable about said axis in response to pivotal movement of said handle;

locator surface means on said frame means at said handle positions engageable by said selector pin means to dispose said handle in said positions, said locator surface means including a first surface at one level for said first position, a second surface at a different level for said second position;

forward abutment surface means extending on said frame means transversely to each of said first and second position locator surfaces and depending below the level of said first and second locator surfaces so as to be disposed in the path of movement of said selector pin means for engaging said selector pin means after it leaves the first and second locator surfaces at the completion of rapid upshifts to arrest forward motion of the handle;



rearward abutment surface means on said frame means cooperating with said forward abutment and locator surface means to define gates affording passage of said selector pin means in the reverse direction;

biasing means acting on said selector pin means to urge said selector pin means into engagement with said locator surfaces and operable at the completion of an upshift to displace said pin means positively through said gates; and

trigger means carried by said handle for displacing said selector pin means against its bias to afford placement of said handle in selected ones of its shift positions.

4,119,000

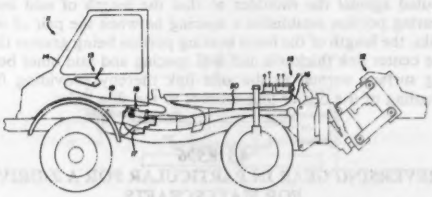
REMOTE CONTROL ASSEMBLY

Phillip G. Venable, Orion, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed May 12, 1977, Ser. No. 796,091

Int. Cl.[2] G05G *11/00*

U.S. Cl. 74—479 **22 Claims**



1. In a tractor-like vehicle having a hydrostatic pump for operating one or more tractor attachments, said hydrostatic pump having a pump control element whose rotation controls pump operation, and including a first remote pump control device disposed in a first predetermined area of the tractor vehicle and a second remote pump control device disposed in a second and different predetermined area of the tractor vehicle, each of the pump control devices having a manually-operable control lever positionable to a locked neutral position, a forward position and a reverse position, an improved remotely operable hydrostatic pump control assembly comprising:

a pivot means;

a control arm having a first portion secured to said pump control element for rotating same in a first direction for forward operation and in a second and opposite direction for reverse operation and a second portion spaced from said first portion for operatively carrying said pivot means;

a pivot member having an intermediate portion adapted to be pivotally attached to said pivot means for rotation with respect to said control arm;

first control cable means including a cable having one end operatively coupled to said first remote pump control device and the control end operatively connected to one end portion of said pivot member for defining a first fixed pivot axis through the point of connection whenever said control lever of said first remote pump control device is locked in said neutral position; and

second control cable means including a cable having one end operatively coupled to said second remote pump control device and the control end operatively connected to the opposite end portion of said pivot member for defining a second fixed pivot axis through said point of connection whenever said control lever of said second remote pump control device is locked in said neutral position, said first control cable means being responsive to the control lever of said first remote pump control device being moved to said forward position for rotating said pivot member in said first direction about said second pivot axis such that said pivot means rotates said control arm in said first direction and responsive to the control lever of said first remote pump control device being moved to said reverse position for rotating said pivot member in said second direction about said second pivot axis such that said pivot means rotates said control arm in said second direction, said second control cable means being responsive to the control lever of said second remote pump control device being moved to said forward position for rotating said pivot member in said second direction about said first pivot axis such that said pivot means rotates said control arm in said first direction and responsive to the control lever of said second remote pump control device being moved to said reverse position for rotating said pivot member in said first direction about said first pivot axis such that said pivot means rotates said control arm in said second direction.

4,119,001

METHOD OF AND MACHINE FOR REPROFILING A RAILROAD-CAR WHEEL

Helmut Wittkopp, and Achim Lison, both of Erkelenz, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt GmbH, Erkelenz, Fed. Rep. of Germany

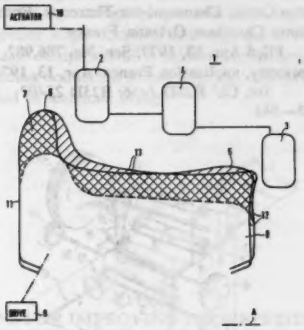
Filed May 3, 1977, Ser. No. 793,276

Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620393

Int. Cl.[2] B23B *1/00, 5/28, 3/28*

U.S. Cl. 82—1 C **11 Claims**

1. A method of reprofiling the outer periphery of a railroad car wheel by a turning operation with a single tool having several cutting portions arranged in fixed position relative to each other, said method comprising the steps of simultaneously premachining said periphery at two opposite axial end portions in a first pass with two cutting portions of said tool; and thereafter machining the entire periphery with at least one of said two cutting portions in a single finish cutting pass, the fixed



position of said cutting portions relative to each other being maintained during the whole machining operation.

4,119,002

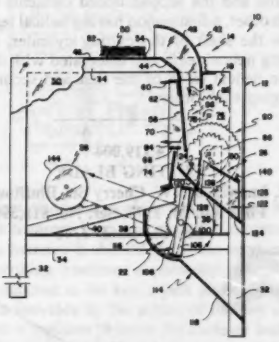
SOD CUTTER

Ronnie Hamilton Coldiron, Portland, Tex., assignor to Turf-Tech Inc., Corpus Christi, Tex.

Filed Apr. 15, 1977, Ser. No. 787,910

Int. Cl.[2] B26D *7/06, 4/06*

U.S. Cl. 83—120 **8 Claims**



1. A machine for alternatively cutting large sod pieces into small sod blocks or sod strips, comprising

means for receiving the large sod pieces and directing the same in a path of sod movement;

a first cutting mechanism in the path of sod movement for severing the large sod pieces into sod strips including a plurality of blades parallel to the path of movement and means for rotating the blades;

a second cutting mechanism disposed to receive the strips from the first cutting mechanism for severing the strips into small sod blocks;

means providing a discharge chute; and

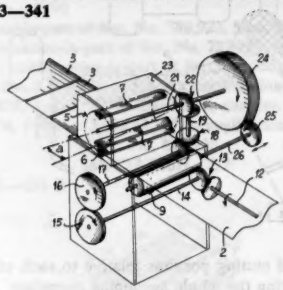
a diverter comprising a plurality of finger members mounted for movement between a non-diverting position interdigitating with the blades for directing the sod strips toward the second cutting mechanism and a diverting position for directing the sod strips to the discharge chute.

4,119,003

APPARATUS FOR TRANSVERSELY CUTTING A WEB OF MATERIAL

Louis Gaston Corse, Chaumont-sur-Tharonne, France, assignor to Machines Chambon, Orleans, France

Filed Apr. 13, 1977, Ser. No. 786,982
Claims priority, application France, Apr. 13, 1976, 76 10765
Int. Cl.[2] B26D *1/56;* B23D *25/02*
U.S. Cl. 83—341 8 Claims



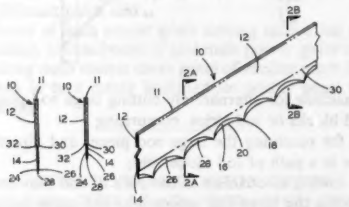
1. Apparatus for transversely cutting up a web, the apparatus comprising a cutting head having a transverse shaft, a cutting cylinder firmly mounted on said transverse shaft, at least one blade being provided on the periphery of the cutting cylinder, means for causing said transverse shaft and the cutting cylinder to rotate about the axis of said transverse shaft, a counter-blade extending below the cutting cylinder, a frame carrying the cutting cylinder and the counter-blade and mounted to pivot about a vertical and lateral axis so as to adjust the angle of the cutting head in relation to the web in dependence upon the rate of feed of the web, a first infeed element disposed below the web upstream of the cutting head, a second infeed element disposed above the web upstream of the cutting head, the first and the second infeed elements being pressed against each other, a first pinion having helical teeth and firmly mounted on the shaft of the cutting cylinder, and a second pinion having helical teeth and associated with the first infeed element, the helical teeth of the first and second pinions directly engaging each other.

4,119,004

CUTTING BLADE

Clarence H. Ludwig, 816 W. Cherry St., Bluffton, Ind. 46714

Filed Jul. 25, 1977, Ser. No. 818,396
Int. Cl.[2] B26D *1/46*
U.S. Cl. 83—661 8 Claims



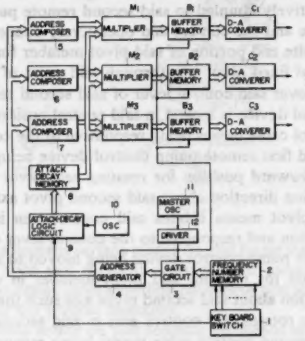
1. A slicing blade comprising a band having a flexible base section and a cutting section integrally related thereto and consisting of a series of regularly constructed scallops forming a cutting edge with regularly spaced cutting peaks and intermediate cutting valleys, inclined side faces of said scallops which intersect at the cutting edge which extends continuously between successive crests and valleys, and a reduced cross section untapered shank interconnecting the inclined side faces and said base and of substantially constant cross section throughout the length of the blade and of narrower dimension than said base to provide a continuous relief for the material being sliced by said cutting edge and providing substantially frictionless movement of the blade through the material being cut.

4,119,005

SYSTEM FOR GENERATING TONE SOURCE WAVESHAPES

Michio Kondo; Akira Nakada; Masanobu Chibana; Tsuyoshi Futamase, and Akiyoshi Ohya, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 619,557, Oct. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 448,573, Mar. 6, 1974, abandoned. This application Apr. 4, 1977, Ser. No. 784,317
Claims priority, application Japan, Mar. 10, 1973, 48/28159
Int. Cl.[2] G10H *1/02, 5/10*
U.S. Cl. 84—1.01 8 Claims



1. A system for generating tone source waveshapes comprising a pre-loaded frequency number memory device which stores in digital representation a plurality of frequency numbers corresponding respectively to the fundamental frequencies of the notes of said waveshapes; a keyboard switch circuit having a key-actuated switch for each of said notes for reading out a frequency number respectively corresponding thereto from said frequency memory device; an address generator responsive to the frequency number read out from said frequency memory device for producing a given number of successive address signals periodically, each address signal consisting of a plurality of bits; at least one address composer connected to receive said successive address signals from said address generator directly and responsive to a predetermined number of said plurality of bits of each address signal in the range from one bit to *n* bits, where *n* is more than one and less than the bit plurality, for digitally composing a tone waveshape having a fundamental frequency corresponding to said read out frequency number with an amplitude versus time characteristic determined by the digital word value of each predetermined number of address signal bits to which said one address composer responds; and means for converting the digitally composed tone waveshape into an analog equivalent thereof.

4,119,006

CONTINUOUSLY VARIABLE ATTACK AND DECAY DELAY FOR AN ELECTRONIC MUSICAL INSTRUMENT

John Thomas Whitefield, Harleysville, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Feb. 24, 1977, Ser. No. 771,617
Int. Cl.[2] G10H *3/00*
U.S. Cl. 84—1.13 8 Claims

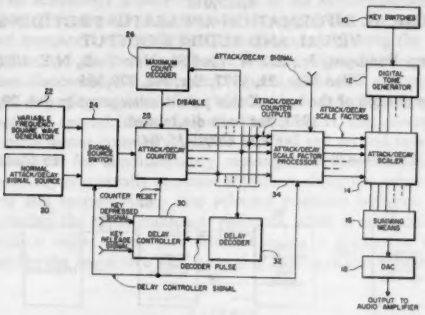
1. In a digital electronic musical instrument having switches selectively actuable to cause the production of sounds corre-

sponding to respective notes of the musical scale and an attack and decay signal whose logic states distinguish between an attack mode and a decay mode, an apparatus for delaying the audible attack and/or decay period comprising:

a digital up counter for counting through the "*n*" states of a selected period at a rate determined by the frequency of a signal source,

a first signal source means for advancing said digital up counter,

a second signal source means for advancing said digital up counter,



a switching means for selecting between said first and second signal source,

a delay decoder means for generating a pulse upon detection of a predetermined "*n*" state of said digital up counter,

a delay controller means for indicating the delay mode and resetting said digital up counter,

a maximum count decoder means for terminating the advance of said digital up counter upon detection of some predetermined "*n*" state of said digital up counter, and

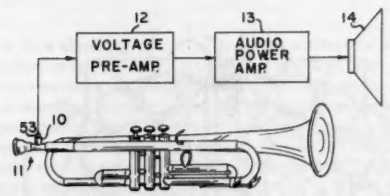
a processor means responsive to said attack and decay signal and said delay controller signal for modifying said digital up counter output.

4,119,007

PRESSURE TRANSDUCER FOR MUSICAL INSTRUMENTS

John J. Criglar, 111 York Dr., Piedmont, Calif. 94611, and Arnold Lazarus, 39 Seward St. #3, San Francisco, Calif. 94114

Filed Feb. 2, 1976, Ser. No. 654,159
Int. Cl.[2] G10H *3/00*; H04M *1/00*; H01L *1/22, 10/10*
U.S. Cl. 84—1.14 **7 Claims**



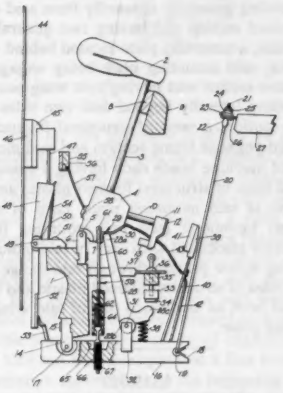
1. In a musical instrument having an air column through which pressure variations pass in producing musical sounds, and which may have a key hole used for altering the tone of musical sounds out of said instrument while in use, a pizzoresistive pressure transducer with said air column ahead of any key hole that may be present in the instrument for producing electrical signals linearly proportional to said pressure variations of musical sounds in said column produced by a musician operating the instrument, and means AC coupled to said transducer for applifying said signals, said transducer being comprised of piezoresistive elements in a Wheatstone bridge diffused on a stift diaphragm subject to direct pressure variations in said air column, and said signal amplifying means including a noiseless voltage amplifier stage coupling said transducer to a power amplifier stage comprised of a shielded transformer having primary winding connected across opposite ends of the bridge proper of said Wheatstone bridge.

4,119,008

MEANS FOR IMPROVING THE REPETITION CHARACTERISTICS OF AN UPRIGHT PIANO ACTION

Thomas E. Kimble, Covington, Ky., assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Feb. 9, 1977, Ser. No. 766,881
Int. Cl.[2] G10C *3/18*
U.S. Cl. 84—242 **7 Claims**



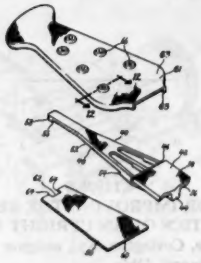
1. In an upright piano action of the type having a hammer for each key, each hammer having a pivotally mounted hammer butt so that the hammer is shiftable between an at-rest position and a string striking position, a pivotally mounted wippon operatively connected to the key, a jack pivotally mounted on the wippen and movable by the action of the key and wippen from an operative position beneath the hammer butt to a position out from under the hammer butt to propel the hammer from its at-rest position toward its string striking position upon depression of the key, and a back check to hold said hammer in a rebound position after striking said string and while said key is fully depressed, the improvement comprising an adjustable spring and linkage assembly attached at its ends to said wippen and said hammer butt, said spring and linkage assembly being so adjusted that said spring is essentially unloaded when said jack is beneath said hammer butt and upon depression of the key during movement of said hammer, wippen and jack to the point where said jack escapes from under said hammer butt, and so loaded by the relative movement of the wippen and the hammer butt after the jack has shifted out from under the hammer butt and said hammer has struck said string as to hold said hammer in an intermediate position upon partial release of said key and release of said hammer by said back check, permitting said jack to regain its operative position beneath said hammer butt without full key release.

4,119,009

STRINGED INSTRUMENT NECK WITH PEGHEAD

Charles William Kaman, II, East Killingly, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Nov. 29, 1977, Ser. No. 855,798
Int. Cl.² G10D *3/14, 1/08*
U.S. Cl. 84—293 **8 Claims**



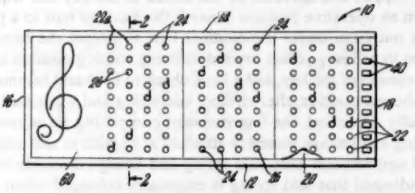
1. A neck for a stringed musical instrument, said neck comprising: a one-piece metallic neck frame having an elongated fingerboard section with upper and lower ends and a peghead section extending generally upwardly from said upper end of said fingerboard section and having two generally upwardly extending sides, a mounting plate located behind said peghead frame section, said mounting plate being engaged with said peghead frame section and having two wing portions respectively extending laterally beyond said two sides of said peghead frame section, a mass of structural foamed plastic surrounding said peghead frame section and said mounting plate, a plurality of machine heads each having a spindle extending through said mass of structural foamed plastic and one of said wing portion of said mounting plate, each of said machine heads further having at least one mounting flange, and a mounting screw associated with each of said mounting flanges, said mounting screw passing through said flange and through part of said mass of structural foamed plastic and being threadably engaged with an associated one of said wing portions of said mounting plate.

4,119,010

MUSIC TRAINING DEVICE

Anthony G. Holley, 265 Hicks St., Brooklyn, N.Y. 11201

Filed Aug. 23, 1976, Ser. No. 716,678
Int. Cl.² G09B *15/00*
U.S. Cl. 84—470 R **4 Claims**



1. In a music training aid device of the class described comprising, in combination,

a. a housing having plural aligned vertical rows of equally spaced apertures in the face thereof;

b. each of said apertures being located on a line or space of a simulated music staff;

c. manually operable pegs associated with each aperture;

d. normally inactive plural sound producing means;

e. each of said plural sound producing means being related to the series of apertures and pegs in a horizontal line representative of the line or space in the music staff;

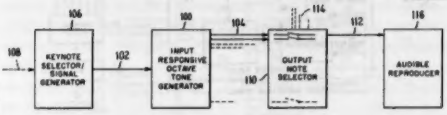
f. and means to activate said normally inactive sound producing means when a manually operable peg is manually operated to produce a sound representative of the musical pitch of an operated peg of series of pegs in a horizontal line in its related line or space of the music staff and to sustain said sound producing means to produce sound as long as said is operated.

4,119,011

MUSICAL INFORMATION APPARATUS PROVIDING VISUAL AND AUDIBLE OUTPUT

George Pandapas, Jr., 322 W. 72nd St., New York, N.Y. 10003

Filed Mar. 21, 1977, Ser. No. 779,366
The portion of the term of this patent subsequent to Jul. 20, 1993, has been disclaimed.
Int. Cl.² G09B *15/04*
U.S. Cl. 84—470 R **15 Claims**



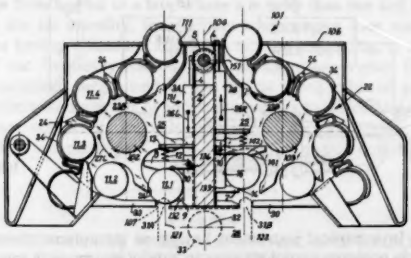
1. A musical information display device comprising first and second members supported for movement relative to one another, said first member bearing spaced musical note indicia, said second member having viewing apertures registrable with said indicia, a plurality of closure members each movable independently of movement of the remaining of said closure members to provide selective visual display of said indicia through said apertures, and circuit means responsive to such movement of said closure members to produce audible output signals indicative of the tonal character of such visually displayed indicia.

4,119,012

DOUBLE-FEED SPROCKET ARRANGEMENT FOR MUNITION CHANGING

Guenter Frye, Dusseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 733,339, Oct. 18, 1976, abandoned.
This application Dec. 6, 1977, Ser. No. 857,995
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1975, 2546843
Int. Cl.² F41D *9/02*
U.S. Cl. 89—33 SF **7 Claims**



1. In a double-feed arrangement for introducing munitions shells into an elongated breech of an automatic weapon having a breech block movable along a first axis through the feed arrangement for serially receiving shells therefrom, the breech block having first and second shell-engaging regions disposed on opposite sides of the first axis and extending upwardly in

first and second planes, the feed arrangement comprising, in combination, first and second feed sprockets individually supported for rotation around second and third axes on opposite sides of and closely adjacent to the first axis thereof with the breech block being movable through the space between the feed sprockets, the feed sprockets respectively having a plurality of circumferentially spaced shell-receiving pockets therein for successively conveying shells along individual first and second paths extending through the first and second planes as the feed sprockets are rotated, first and second receptacle means for receiving shells from the respective feed sprockets to be selectively transferred to one of the shell-engaging regions of the breech block, means supporting the first and second receptacle means for reciprocal movement along the first and second planes, respectively, between aligned lower positions disposed in the path of movement of the first and second shell-engaging regions of the breech block and aligned upper positions spaced from said path of movement, and reversible control means coupled jointly to the first and second receptacle means for simultaneously moving the receptacle means vertically in mutually opposite directions along the respective first and second planes into selected positions between and including the upper and lower positions, when in said between position either receptacle means keeping a respective shell outside the respective shell-engaging region of the breech.

4,119,013
HYDRAULIC CHUCKING DEVICE IN A HOBBING MACHINE

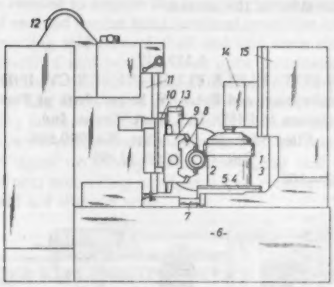
Max Seitz, Munich, Germany, assignor to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed Jan. 26, 1977, Ser. No. 762,752

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1976, 2604010

Int. Cl.² B23B *31/30*; B23G *23/06*

U.S. Cl. 90—1 **6 Claims**



1. In a chucking device mounted on a rotatably supported workpiece spindle of a gear hobbing machine, said chucking device having a chucking piston which is reciprocally movable in a chucking cylinder supported for rotation with said workpiece spindle, first fluid pressure supply means for selectively supplying pressurized fluid to said chucking cylinder and opposite sides of said chucking piston and second fluid pressure supply means for supplying pressurized fluid to said first fluid pressure supply means, the improvement comprising:

a. a face plate secured to said workpiece spindle and having a mounting surface thereon, said chucking cylinder being secured to said face plate, said chucking cylinder having an end plate sealing off one end of said chucking cylinder and forming a coplanar surface with said mounting surface on said face plate; and

b. means preventing a relative axial movement between said first and second fluid pressure supply means and first connecting means connecting said first fluid pressure supply means to said workpiece spindle for rotation therewith and with respect to said second fluid pressure supply means.

4,119,014
METHOD FOR PRECISION WORKING, PARTICULARLY SHAVING, OF GEARS

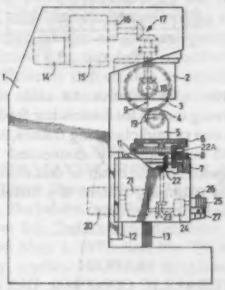
Herbert Loos, Dorfen; Manfred Heckmaier, Unterpfaffenhofen, and Gerhard Reichert, Puchheim, all of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Germany

Filed Feb. 9, 1977, Ser. No. 767,153

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615718

Int. Cl.² B23F *19/06*

U.S. Cl. 90—1.6 R **7 Claims**



1. In a method for the precision working of gear-shaped workpieces utilizing a gear-shaped tool, wherein crossed axes exist between said tool and said workpiece, wherein said tool and said workpiece are moved relative to each other in one single selectable plane which extends at a right angle to a common normal line at the smallest distance between the axes of said workpiece and said tool, the improvement comprising the steps of driving one of said tool and said workpiece for rotation in a first direction of rotation and simultaneously moving said tool and said workpiece toward each other in said single selectable plane to effect an initial engagement of the teeth on said tool and said workpiece at a first location in the path of said relative movement and the beginning of removal of material from said workpiece, reversing the driving direction of rotation of said one of said tool and said workpiece to a second direction of rotation at a second location in the path of said relative movement that is intermediate said first location and a third location defining the smallest distance between the axes of said tool and said workpiece, said second location being between more than half the distance between said first and third locations and less than total distance between said first and third locations.

4,119,015
BILLET MILLING EQUIPMENT

Goro Tuda, Kobe; Yoshihisa Sawada, Nishinomiya, and Yasuhiro Mugitani, Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Dec. 2, 1976, Ser. No. 746,894

Claims priority, application Japan, Dec. 5, 1975, 50-145664; Jul. 14, 1976, 51-84357

Int. Cl.² B23C *1/12, 1/00*; B24B *7/00*

U.S. Cl. 90—17 **10 Claims**

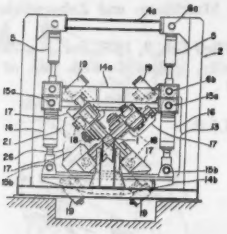
1. Billet milling equipment for cutting and removing a flaw by rotating a milling cutter in pressed contact with a surface to-be-cut of a billet, which comprises:

first frames forming a traveling path through which said billet passes,

a pair of upper and lower clamping frames which are move-

able so as to follow up a deformation of said billet and which are installed on said first frames,

a first and second milling cutter unit, which normally follow up the surface to-be-cut of said billet in correspondence with the deformation of said billet, installed on said upper and lower clamping frames, respectively, means for automatically advancing and retreating said first and second



milling cutter unit relative to said surface to-be-cut wherein driving means for bestowing feed of said billet are installed on one of said clamping frames, and driven means pairing with and operably connected to said driving means is disposed on the other of said clamping frames and wherein said clamping frames are installed on said first frames by cylinder members.

4,119,016

HYDRAULIC CONTROL DEVICE

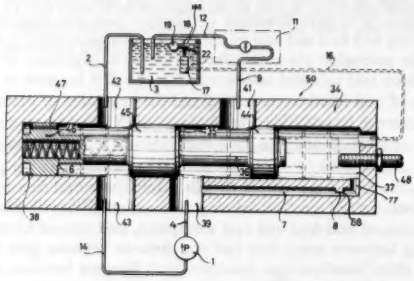
Christian Pfeil, Neuss, Rhein, and Hans Breidenbach, Delrath, both of Fed. Rep. of Germany, assignors to International Harvester Company, Chicago, Ill.

Filed Jul. 1, 1976, Ser. No. 701,475

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1975, 2533164

Int. Cl.[2] F15B *11/08, 13/042*

U.S. Cl. 91—449 **1 Claim**



1. A hydraulic power system of the type comprising a hydraulic power consumer unit, a hydraulic power source having fluid delivery and suction sides, a fluid reservoir including fluid therein at a predetermined system operational level, a float valve positioned in the reservoir and having a plunger valve linked by a lever arm to a float member, the plunger valve having a closed position when the fluid in the reservoir is at the system operational level and an open position when the fluid in the reservoir drops below the system operational level, a suction conduit having an open end positioned in the fluid in the reservoir below the operational level thereof and an opposite end connected to the suction side of the source, CHARACTERIZED BY:

a two position fluid flow diverter valve having a fluid inlet line connected to the fluid delivery side of the source and a fluid feed line connected to the unit and a fluid short circuit means connected to the suction side of the source, the diverter valve having an axially moveable valve spool means acted upon at one side by a spring and acted upon at an opposite side by fluid pressure in a chamber in the diverter valve whereby when the fluid pressure in the chamber exceeds the force of the spring it shifts the valve spool means to the first position of the diverter valve against the force of the spring and connects the inlet line to the fluid feed line and when the force of the spring exceeds the pressure of the fluid in the chamber it shifts the valve spool means to the second position of the diverter valve and connects the inlet line to the fluid short circuit means;

an axially adjustable stop means in the diverter valve chamber for limiting the axial displacement of the valve spool means in the second position of the diverter valve thereby controlling the rate of fluid flow from the inlet line to the short circuit means in said second position of the diverter valve;

a first control line including fluid flow restriction means therein restrictively connecting the delivery side of the source to the diverter valve chamber; and

a second control line connecting the diverter valve chamber to a float valve chamber; the plunger valve closing the float valve chamber from communication with the reservoir in the closed position of the float valve and opening communication in the open position thereof whereby the diverter valve chamber is depressurized and the valve spool means is shifted by the spring to the second position of the diverter valve;

the valve spool means having three control surfaces arranged at axially spaced-apart intervals to each other, one control surface arranged on the spring side of the diverter valve and having an opening therethrough connecting the spring side to the suction side of the source, a second control surface arranged on the chamber side of the diverter valve and interacting with the stop means, and the third control surface arranged between the other two control surfaces controlling fluid flow at the delivery and suction sides of the source.

4,119,017

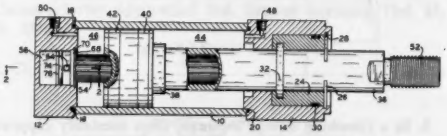
NON-ROTATABLE FLUID POWER CYLINDER

Kay T. Nusbaumer, and Peter W. Boyer, both of Fort Wayne, Ind., assignors to PHD, Inc., Fort Wayne, Ind.

Filed Mar. 23, 1977, Ser. No. 780,666

Int. Cl.[2] F01B *31/00*

U.S. Cl. 92—108 **17 Claims**



1. A fluid power cylinder comprising:

a cylinder barrel,

an end cap enclosing one end of said cylinder barrel,

a guide rod received within said cylinder barrel,

a piston slidably received within said cylinder barrel over said guide rod for rectilinear movement,

a piston rod connected to said piston,

means for slidably keying said piston to said guide rod whereby said piston is locked against rotation with respect to said guide rod about the longitudinal axis of said guide rod,

a guide rod holder rotatably received in said end cap for rotation coaxially with said piston and said guide rod,

means for movably connecting said guide rod and guide rod holder so that said guide rod is locked against rotation relative to said guide rod holder but permitting said guide rod and holder to tilt relative to each other, and

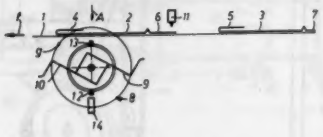
lock means associated with said end cap for releasably clamping said guide rod holder against rotation.

4,119,018

BENDING UNIT FOR A BENDING-GLUEING MACHINE

Giorgio Furtunato Nava, Milan, Italy, assignor to Vega S.p.A., Paderno Dugnano, Italy

Filed Feb. 25, 1977, Ser. No. 771,996
Claims priority, application Italy, May 28, 1976, 23727 A/76
Int. Cl.[2] B31B *1/54*
U.S. Cl. 93—49 AC 7 Claims



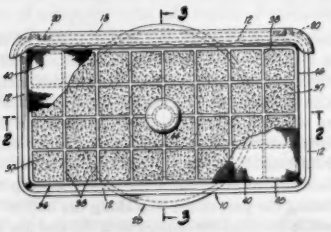
1. The combination with conveying means for successively presenting a workpiece having a foldable rearward end for bending into the direction of travel of said conveying means, said workpiece projecting laterally beyond said conveying means, means for effecting continual travel of said conveying means, of a device for bending said foldable rearward end portion comprising a main shaft disposed beneath said conveying means in axially transverse relationship thereto, at least one pair of bending arms carried on said shaft for rotation thereof and being spaced apart axially of said shaft and projecting beyond opposed sides of said conveying means, a control shaft engaged to one end of main shaft in axially aligned relationship thereto, a signal receiving and processing unit for emission of processed energizing signals, clutch means connected to said signal processing unit for actuation by processed emitted signals for causing rotation of said shafts whereby the bending arms are rotated to engage the overlying workpiece foldable rearward end and carries same into bent condition, cam means interconnecting said control shaft and said main shaft for effecting dwell of said bending arms upon termination of said bending action for a predetermined interval and for permitting rotation of said main shaft thereafter, means for sequentially terminating rotation of said main shaft when said bending arms have moved a predetermined distance beyond bending position, and signal producing means energizing said processor when the next succeeding workpiece is in predetermined relation to said not stopped arms.

4,119,019

WATER REPLENISHING DEVICE FOR COFFEE MAKERS

William P. Reid, 3200 E. 29th St., Long Beach, Calif. 90806

Continuation of Ser. No. 653,291, Jan. 29, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,350
Int. Cl.[2] A47J *31/06*
U.S. Cl. 99—306 7 Claims



1. A filtering unit assembly for use in supplying replenishing water to the upper end of a heater tank of a coffee making machine, comprising:

an upstanding water receiving receptacle having downwardly converging side walls portions joined with an integral bottom wall;

said bottom wall being formed to provide a central depending well having a bottom wall with a discharge opening therein;

a container for soluble granules which release phosphate material, said container being seated in said well over said discharge opening and having permeable bottom and side wall portions for conducting water from the receptacle through said permeable side wall portion and through the container to said discharge opening; and

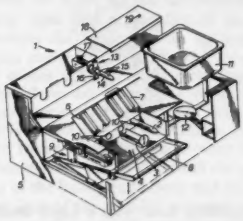
filter means spanning the bottom interior of the receptacle above said container for removing undersirable constituents from the water supplied from the receptacle to the heater tank, said filter means comprising a one-piece outer frame structure having an integral peripheral rib thereabout, said frame structure being constructed of a material which is sufficiently deformable to provide a water-tight seal between said rib and said wall portions.

4,119,020

APPARATUS FOR MAKING HOT DOGS AND THE LIKE

Douglas Cecil William Thomas Sharp, Three Gables, New Road Hill, Midgam, Berkshire, and Frank Ellis, 56 Thamespoint, Fairways Broom Rd., Teddington, Middlesex, both of England

Filed May 2, 1977, Ser. No. 792,853
Claims priority, application United Kingdom, May 10, 1976, 19208/76
Int. Cl.[2] A47J *37/08*
U.S. Cl. 99—339 10 Claims



1. A device for providing a cavity in a bun for receiving a filling, comprising a heating probe adapted to be inserted into a bun to compress the material of the bun to form the cavity and to toast the surface of the cavity so that the cavity remains after removal of the probe therefrom, locating means for locating a bun in alignment with the heating probe, and means for causing relative reciprotable movement between the probe and the locating means for causing the probe to be inserted into and removed from a bun located in the locating means in use.

4,119,021

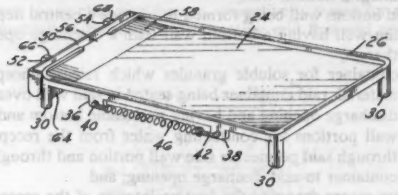
GAS STOVE ATTACHMENT

Lucius Moses, Detroit, Mich., assignor to Viola M. Heyward, Sumpter, S.C.

Filed Apr. 25, 1977, Ser. No. 790,435
Int. Cl.[2] A47J *37/10*
U.S. Cl. 99—425 10 Claims

5. For use with a gas stove having an upper deck provided with at least one opening surrounding a gas burner, an attachment comprising a substantially flat rectangular tray having peripheral edges, means for supporting said tray above the stove deck to provide an open region between said tray and deck, first and second opposed hook means operatively carried by opposite edges of said tray and extending beneath said tray through said open region for engaging a peripheral edge of the

burner opening, said first and second opposed hook means when so engaged holding said tray fixedly in place above the



stove deck, and a trough detachably disposed along one edge of said tray to receive grease and debris scraped from said tray.

4,119,022

DISPENSING HEAD FOR IMPREGNATING MEAT WITH A LIQUID

Dewey B. Dykes, Birmingham; E. Michael Powers, Mountain Brook; T. Kenneth Foster, Birmingham, and Robert E. Rogers, Mountain Brook, all of Ala., assignors to The Jim Dandy Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 585,400, Jun. 9, 1975, Pat. No. 4,005,226. This application Sep. 20, 1976, Ser. No. 724,703

Int. Cl.[2] A23L *3/34*

U.S. Cl. 99—532 **10 Claims**

2. For impregnating meat with a liquid under superatmospheric pressure, a dispensing head comprising

a nozzle-bearing member having

an outer pressing surface portion and

a continuous rim extending slopingly upward and outward about said outer pressing surface portion, and

a plurality of rigid tapered prong-like nozzles having rounded outer wall portions adjoining said outer pressing surface portion,

whereby when said dispensing head is mounted on a dispenser adapted to dispense a liquid under superatmospheric pressure and said dispenser is inverted and said nozzles penetrate into such meat and said pressing surface presses thereagainst sufficiently to spread such meat, said rim squeezes radially inward against the spread of such meat and aids in sealing the meat against said outer wall portions of said nozzles.

4,119,023

PORTABLE PALLET STRAPPING DEVICE

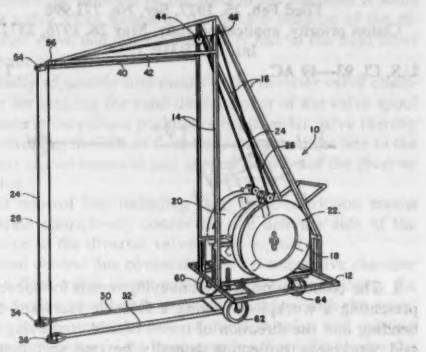
Thomas Jerald Boe; Charles M. Fell, and William Leon Jenkins, all of Naples, Fla., assignors to A. Duda and Sons, Oviedo, Fla.

Filed Jul. 11, 1977, Ser. No. 814,729

Int. Cl.[2] B65B *13/18*

U.S. Cl. 100—2 **10 Claims**

9. The method of threading strapping tapes through the apertures of a pallet so that a load can be readily strapped to the pallet, by the use of a threader device having tape dispensing means thereon, and a pair of threader bars extending outwardly from the base of the device, comprising the steps of securing the end of a strapping tape to the end of each threader bar, moving the threader device into contact with a loaded pallet, so as to cause the threader bars to extend through the apertures of the pallet, and the tapes to lie back along the



threader bars, removing the tape ends from the protruding ends of the threader bars, and bringing same into contact with respective loop portions of the tapes, thus to form two loops around the load, applying a tensioning tool to each tape to bring about a desirable amount of tension therein, securing each tape end fast to the loop of the respective tape, and thereafter cutting away the untensioned portion of each tape.

4,119,024

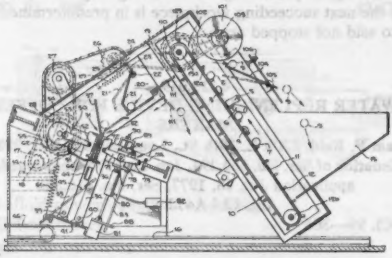
REFUSE CRUSHER

Harry B. White, 12756 Welby Way, North Hollywood, Calif. 91606

Filed Dec. 13, 1976, Ser. No. 749,795

Int. Cl.[2] B30B *1/26*

U.S. Cl. 100—35 **19 Claims**



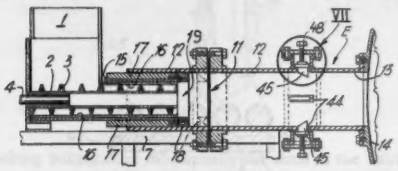
18. A method of crushing objects including conveying objects from a source of objects, dropping objects off the conveyor between a pair of jaws, one of the jaws reciprocating with respect to the other jaw, closing the bottom of the jaws with a flap which is at least partially between the jaws when the jaws are open to receive objects therebetween and pivoting the flap from beneath the jaws when the jaws open after closing to crush the object to allow the object to drop out of the jaws, camming the part of the flap along the bottom of one of the jaws while the jaws are closing until the one jaw pivots the flap from beneath the jaws when the jaws close to crush an object.

4,119,025

METHOD AND APPARATUS FOR CONVEYING PARTICULATE MATERIAL

Douglas Burthum Brown, Ottawa, Canada, assignor to Stake Technology Ltd., Ottawa, Canada

Filed Jan. 24, 1977, Ser. No. 762,093
Int. Cl.[2] B30B *9/38, 11/24, 13/00*
U.S. Cl. 100—35 7 Claims



1. A method of conveying a mass of particulate material from a feeding hopper outlet to a region of processing of said material, said method being of the type including the steps of conveying said material from a region at said hopper outlet by screw conveyor means, and further advancing the material through a conduit communicating said conveyor means with said region of processing, said method further including the steps of:

(a) subjecting said mass to a force generated by said screw conveyor means, said force being directed in an axial direction along a generally straight line, while simultaneously compacting said mass to a first degree of compactness, said first degree of compactness being achieved in a first region adjacent to and including a discharge area of said screw conveyor means, said first degree of compactness being achieved by the action of said screw conveyor means combined with frictional drag acting on said mass at said discharge area due to accumulation of said mass in said first region;

(b) discharging said mass from said first region into a second region, said second region being axially spaced downstream of said first region and being generally co-axial therewith;

(c) subjecting a portion of said mass located at said second region to an intermittent force directed to further advance said mass away from said first region in a direction generally co-axial with the centreline of said conveyor means, said intermittent force being imparted to said mass solely at an annular area generally co-axial with said screw conveyor means;

(d) subjecting the mass located downstream of said second region to a force frictionally retarding the mass relative to said intermittent force to thus further compact said mass to a second degree of compacting, said second degree of compacting being in excess of said first degree of compacting;

(e) further advancing the mass compacted to said second degree of compactness to said region of processing along a generally straight line co-axial with the centreline of said screw conveyor means, whereby a portion of said mass assumes the shape of a continuous, compacted plug corresponding in cross-section to the cross-section of said conduit; and

(f) discharging the leading end of said mass from said conduit into a processing means while maintaining said conduit in a permanent communication with said region of processing;

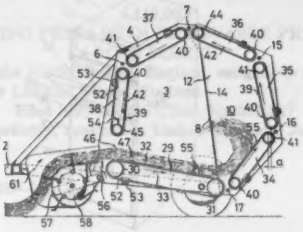
whereby said continuous compacted plug forms the sole closure means separating said region of processing from said hopper.

4,119,026

MACHINE FOR FORMING A ROUND BALE OF FIBROUS AGRICULTURAL MATERIAL

Hans Otto Sacht, Wolfenbuttel, Germany, assignor to Gebrüder Welger, Wolfenbüttel, Germany

Division of Ser. No. 612,104, Sep. 9, 1975, Pat. No. 4,009,653. This application Jan. 26, 1977, Ser. No. 762,483
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1974, 2443838
Int. Cl.[2] B30B *3/04*
U.S. Cl. 100—89 9 Claims



1. A machine for forming round bales of windrowed fibrous agricultural material and the like, comprising a cage-like frame having a horizontal central axis defining a generally cylindrically-shaped baling zone, said frame comprising a pair of upwardly extending side walls spaced apart in the horizontal direction, said side walls extending transversely of the horizontal central axis of the baling zone and defining the opposite ends of the baling zone, conveying means extending between said side walls, said conveying means comprising a bottom conveyor member for receiving the agricultural material as it enters the baling zone and a plurality of serially arranged conveying elements for receiving the agricultural material from said bottom conveyor member, and means for driving said conveying means in the direction defining the generally cylindrical circumferential peripheral of the baling zone, wherein the improvement comprises that said conveying elements are fixably journalled to the frame and stationarily mounted on said frame relative to each other during the bale forming operation and are disposed around the generally cylindrical periphery of the baling zone from said bottom conveyor member, the last one of the serially arranged said conveying elements is disposed above said bottom conveyor member in the generally cylindrical peripheral direction of the baling zone and said bottom conveyor member defines the lower side of an inlet opening into the baling zone, and said conveying elements comprise a plurality of conveying rollers arranged in side-by-side relation around the generally cylindrical periphery of the baling zone with the axis thereof disposed in generally parallel relation to the horizontal central axis of the baling zone.

4,119,027

REFUSE COMPACTOR

Alvin J. Elders, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 17, 1973, Ser. No. 397,831
Int. Cl.[2] B30B *15/30*
U.S. Cl. 100—215 23 Claims

1. A refuse compactor comprising:

a cabinet;

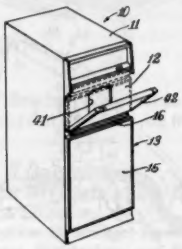
a container defining a compacting space in which refuse is disposed to be compacted and having an open portion through which refuse may be passed;

means for movably mounting the container to the cabinet for selective positioning in a compacting position within the cabinet and an access position outwardly of the cabinet for facilitated introduction of gross amounts of refuse thereinto;

ram means in said cabinet;

means for moving the ram means selectively between a retracted position adjacent the container open portion with the container in the compacting position and a compacting position wherein the ram engages and forcibly compacts the refuse in the container in its compacting position;

means for causing the configuration of the ram means in the retracted position to be different from that of the ram



means in its compacting position to define a small delivery passage within the cabinet providing limited access to the container open portion in the compacting position of the container; and

means providing controlled access to said delivery passage for introduction of small amounts of refuse through the delivery passage into the container with the container being disposed within the cabinet in its compacting position notwithstanding the disposition of the ram means adjacent the container.

4,119,028

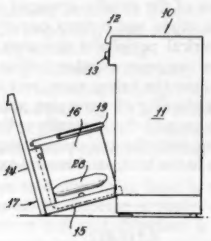
REFUSE CONTAINER FOR A COMPACTOR

Aman Ullah Khan, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 14, 1977, Ser. No. 776,998

Int. Cl.² B30B *15/32*

U.S. Cl. 100—218 **8 Claims**



1. For use in a refuse compactor, a storage receptacle for storing refuse to be compacted therein, said receptacle comprising

an open top container having a plurality of substantially vertically straight sidewalls and a bottom wall, at least one of said sidewalls having a pressure deformable hollow inwardly opening section thereof adjacent said bottom wall and extending outwardly out of alignment with the sidewall, said hollow section extending less than the horizontal extent of the sidewalls and being constructed to be deformed into substantial alignment therewith as a result of pressure being applied inwardly against said hollow section and to assume its hollow outwardly extending configuration when outwardly unrestricted.

4,119,029

MOLDED CHARACTER BELT WITH INTEGRAL SLEEVES

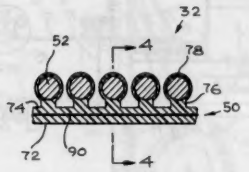
Norman McMillan, Westlake Village, and Henry M. Dier, Woodland Hills, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 639,349, Dec. 10, 1975, abandoned.

This application May 24, 1977, Ser. No. 801,202

Int. Cl.² B41J *1/20*

U.S. Cl. 101—111 **4 Claims**



1. A character belt for use in printing apparatus for successively presenting type characters to a print station, the character belt comprising:

an endless band of uniform width having inner and outer peripheral surfaces and characterized by being relatively flexible about an axis in the plane of said band perpendicular to its length and relatively rigid about an axis in the plane of said band parallel to its length;

a plurality of platforms each having an inner end substantially contiguous with said band outer peripheral surface and an outer end spaced therefrom by the height of the platform, said platforms being of uniform height and being uniformly spaced along said band outer peripheral surface extending across the width thereof and integral therewith;

a plurality of elongated slugs of circular cross-section, each having a circumferential surface and at least one end face and being oriented across the width of said band adjacent to a different one of said platforms;

a plurality of sleeves, each integral with a different one of said platforms extending from the outer end thereof, each sleeve having a wall thickness substantially less than the height of the platform, each sleeve formed of material molded around and conforming to the circumferential surface of the slug adjacent thereto, said sleeve material being permanently bonded to the circumferential surface of said slug; and

a type character carried on an end face of each of said slugs.

4,119,030

ENDLESS PRINTING BELT FOR ROTARY RUBBER STAMP

Takaji Funahashi, No. 1, 2-chome, Kitatakasho-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jun. 29, 1977, Ser. No. 811,190

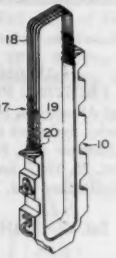
Claims priority, application Japan, Jul. 13, 1976, 51-83380

Int. Cl.² B41J *1/20*

U.S. Cl. 101—111 **5 Claims**

1. An endless printing belt for a rotary rubber stamp, which comprises an endless rubber belt body having a plurality of printing letter sections on a surface thereof and a reinforcing endless belt fabric embedded in the back side of said endless rubber belt body, said endless belt fabric being woven by wefts including stainless steel fine wires disposed in parallel to one

another in the lengthwise direction of said belt and filamentary warps comprising yarns composed of a synthetic resin having



a melting temperature substantially the same as the vulcanization temperature of the rubber of said endless rubber belt body.

4,119,031

APPARATUS FOR APPLYING AND WITHDRAWING A PRESSURE CYLINDER ACTING ON THE PLATE CYLINDER IN AN INTAGLIO PRINTING PRESS

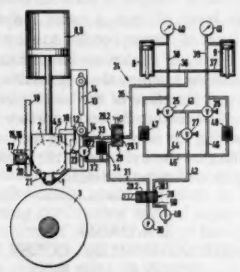
Ludger Ottenhues, Riesenbeck, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Aug. 11, 1977, Ser. No. 823,683

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2638750

Int. Cl.[2] B41F *13/40*

U.S. Cl. 101—153 **2 Claims**



1. An intaglio printing press having a pressure cylinder (1) acting on a plate cylinder (3), the press being adapted to be connected to a pressure source and having a frame, a journal for each end of the pressure cylinder displaceably mounted in the frame, lifting cylinder means having lifting cylinders (8,9) associated with respective journals (4,5) of the pressure cylinder (1) for raising and lowering the pressure cylinder, synchronizing shaft means for intercoupling the journals, and an apparatus cooperating with said lifting cylinder means for applying and withdrawing the pressure cylinder and for moving the pressure cylinder a predetermined distance to effect a cylinder change, said apparatus comprising:

first regulating valve means for controlling application and withdrawal movement of said pressure cylinder during printing by selectively connecting the pressure source to said lifting cylinders (8,9), said movement including a reversing period;

circuit means bypassing said first regulating valve means for connecting the pressure source to said lifting cylinders for raising the pressure cylinder for a cylinder change;

valve control means associated with one of the journals (4,5) and having a dog (10) and a control cam (11) for controlling said first regulating valve means, said control cam (11) switching said first regulating valve means during the reversing period and closing said first regulating valve means during cylinder change; and

second regulating valve means connectable to the pressure source for controlling pressure furnished said lifting cylinders during printing and including fine regulating valves (25,26) separately settable for each lifting cylinder (8,9), pressure sensing means (40,41) for indicating the pressures acting on the lifting cylinders, and regulating valve means (27) for controlling the supply of pressure from the pressure source to said fine regulating valves (25,26).

4,119,032

PRINTING PRESS WITH REMOVABLE PRINTING ROLL SLEEVE

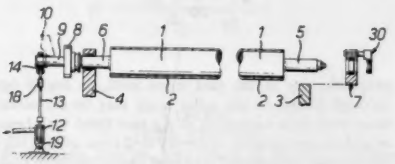
Richard John Hollis, Bristol, England, assignor to Strachan & Henshaw Limited, Bristol, England

Filed May 27, 1977, Ser. No. 801,347

Claims priority, application United Kingdom, Jun. 2, 1976, 22847/76

Int. Cl.[2] B41F *27/10*

U.S. Cl. 101—216 **10 Claims**



1. In a printing machine having at least one printing roll with a removable sleeve which provides a printing surface on the roll, said roll having a shaft member on each end and being journalled in side frames of the machine one beyond each axial end of the roll by bearings in the respective side frames, each said shaft member extending beyond each respective side frame, the improvement comprising:

a removable block in one of said frames, said block having at least one dimension greater than the radius of said sleeve, the bearing in said one frame being in the removable block;

means for allowing the removal of said block from its position in the said one side frame and of the bearing from the roll, so as to allow for axial sleeve-removal and fitting operations to be carried out upon the roll from that axial end when said roll is maintained substantially in its working position; and,

means beyond the other side frame and acting on a said extending shaft member for counterpoising said roll and maintaining it substantially in said working position when said removable block has been removed from its position in the said one side frame.

4,119,033

INK ROLLER DEVICE FOR PRINTING HEAD OF HAND LABELER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

Filed Jun. 1, 1977, Ser. No. 802,426

Claims priority, application Japan, Jun. 15, 1976, 51-077211[U]

Int. Cl.[2] B41J *1/42*

U.S. Cl. 101—348 **12 Claims**

1. In combination, an ink roller device for use in inking a printing head and an ink roller containing and supplying casing;

said ink roller device comprising:

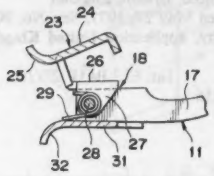
a mounting assembly for mounting said ink roller device;

a pair of arms extending from said mounting assembly; each

said arm having an end portion away from said mounting assembly; a notch defined in each said arm end portion; said notch including an entrance side leading into said notch;

an ink roller assembly removably attached to said arms; said ink roller assembly including an ink roller body; a pair of shafts, with each said shaft projecting from a respective end of said roller body; said shafts being so positioned and so sized as to be fittable in a respective one of said notches through said entrance sides thereof;

said casing having an upstanding front wall with two upstanding, vertically extending slots therein spaced a distance apart equivalent to the spacing distance separating said arms of said pair thereof; said casing having, on a wall



perpendicular to the said front wall, an outlet opening through which an ink roller body may be extracted; said front wall slots extending along said front wall beginning at said outlet opening, whereby said arms of said ink roller device may be inserted into said casing through said front wall slots, with said notches of said arms extended into said casing such that said notches may engage said shafts of an ink roller body in said casing, and the engaged said ink roller body may then be removed through said casing outlet by raising of said arms out of said front wall slots of said casing;

a plurality of said ink roller bodies normally positioned in said casing at a location to be accessible to said casing outlet and said front wall slots thereof.

4,119,034

LEAKPROOF INK SUPPLY RESERVOIR

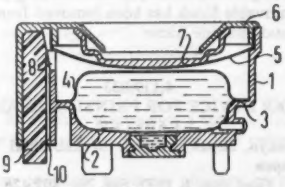
Franz Wax, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 1, 1978, Ser. No. 874,205

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 2704735

Int. Cl.[2] B41F *31/02*

U.S. Cl. 101—366 **7 Claims**



1. In a replaceable ink supply device for use in supplying ink to an ink printing device with the supply device including a housing means containing at least part flexible ink container and means for temporarily increasing the pressure of the ink in the container, the improvement of the housing having elevated wall means defining a chamber in which the container is at least partially received, an elastic diaphragm closing the chamber in opposition to the ink container, a plate means carried by the diaphragm for applying pressure to the container by movement of the plate means, a collection chamber associated with the housing means for receipt of ink and a venting and overflow channel between the chamber and the collection chamber interior.

4,119,035

PRINTING PLATE

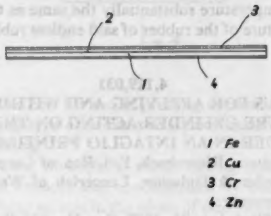
Kurt Reiser, and Paul Abendroth, both of Offenbach am Main, Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG., Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,906

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2649011

Int. Cl.[2] B41H *1/08*

U.S. Cl. 101—459 **1 Claim**



1. A flexible metal printing plate for clamping to the surface of a plate cylinder in a printing press in the presence of casual moisture plus traces of a plate and cylinder cleaning agent forming an electrolyte trapped in between comprising, in combination, a base layer of iron, a noble metal printing layer consisting of a layer of copper bonded to the top surface of the base layer and a layer of chromium bonded to the top surface of the copper with the bonding thereof resulting in noble metal residue on the under surface of the base layer, and a layer of zinc conductively bonded to the under surface of the base layer completely covering the same including the residue thereby to protect the surface of the cylinder in the presence of electrolyte from galvanic action by the residue.

4,119,036

ROCKET MOTOR COMPRISING COMBUSTIBLE CASE, NOZZLE, AND FINS

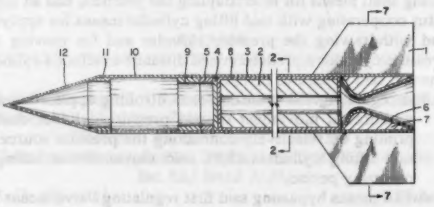
Minoru Hayashi, Tatsuno, and Kazuo Kishi, Himeji, both of Japan, assignors to Daicel Ltd., Osaka, Japan

Continuation of Ser. No. 628,503, Nov. 3, 1975, abandoned. This application Nov. 4, 1977, Ser. No. 848,740

Claims priority, application Japan, Dec. 23, 1974, 49-147810; Jan. 17, 1975, 50-7607

Int. Cl.[2] F42B *15/10*

U.S. Cl. 102—49.3 **22 Claims**



1. A completely combustible rocket comprising a rocket shell constructed of a laminate of high tensile strength metal foils, easily combustible metal foils and easily combustible adhesive layers, the easily combustible metal foils being of a different material than the high tensile strength metal foils.

4,119,037

CARRIER PROJECTILES FOR EJECTABLE PAYLOADS

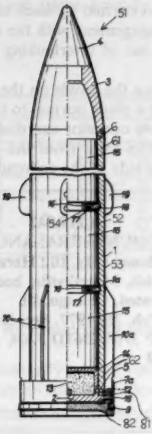
Rudolf Romer, Kaarst; Rolf Hellwig, and Dietmar Karius, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 2, 1976, Ser. No. 746,837

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2558060

Int. Cl.[2] F42B *13/50*

U.S. Cl. 102—69 **9 Claims**



1. In a carrier projectile adapted for supporting and ejecting a succession of longitudinally spaced payloads when an ignition charge disposed in the projectile is ignited, a central cylindrical body for receiving the successive payloads, a shell head coupled to a forward portion of the body, an ignition charge container coupled to a rear portion of the body, plunger means associated with the front portion of the ignition charge container for propelling the payloads forwardly when the charge in the charge container is ignited, a plurality of spacer elements disposed in longitudinally spaced relation in the cylindrical body for separating confronting ends of adjacent ones of the payloads, the portions of the inner wall of the cylindrical body radially aligned with the spacer elements having respective annular grooves tapering inwardly in a forward direction, and a blocking element carried by each spacer element and resiliently urged radially outwardly into contact with the associated groove on the cylindrical body so that each payload is propelled forwardly by the plunger under a positive load established by the urging force of the blocking means on the inner surface of the cylindrical body after ignition is effected.

4,119,038

CONTROLLED ACTIVATION OF RESERVE POWER SUPPLIES

Floyd Allen, Washington, D.C., and Asaf A. Benderly, Potomac, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 13, 1977, Ser. No. 796,583

Int. Cl.[2] F42C *11/06*

U.S. Cl. 102—207 **10 Claims**

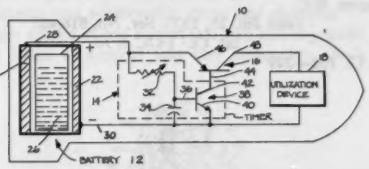
1. A system for controlling the activation of a reserve battery comprising:

a reserve battery activated in response to a predetermined external condition;

a utilization device powered by the battery;

timing means connected to the battery for switching on after a preselected time constant elapses subsequent to the instant of initial battery activation, said timing means operated by the reserve battery; and

switching means connected between the battery and the utilization device for switching current from said reserve battery to said utilization device responsive to the timing means,



said timing means operating said switching means upon lapsing of said preselected time constant, so that the utilization device draws load current from the battery only after full activation of the battery thereby preventing polarization of the battery.

4,119,039

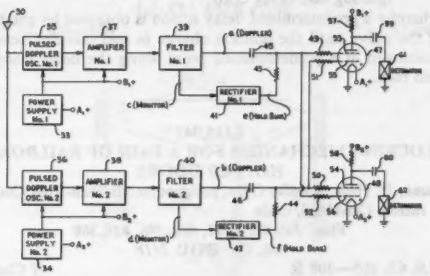
FUZE SYSTEM

Paul E. Wilkins, Fairfax, Va.; Glenn E. Neville, Washington, D.C., and Robert T. Fitzgerald, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 29, 1961, Ser. No. 113,991

Int. Cl.[2] F42C *13/04*

U.S. Cl. 102—214 **4 Claims**

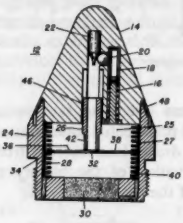


1. A fuze system comprising in combination: an antenna, a plurality of independent channels, a firing circuit, and detonator means; each of said channels comprising oscillating detector means for generating a transmitting signal and a monitoring signal, said detector means upon receipt of a target signal having an output containing a doppler frequency component, amplifying means connected to said oscillating detector means, means connected to said amplifying means for separating said monitoring signal from said doppler target signal, and rectifying means for forming a d-c holding bias from said monitoring signal; said firing circuit having first and second inputs; means for applying both the holding bias and the doppler target signal of one of said channels to said first firing circuit input, and means for applying both the holding bias and the doppler target signal of another one of said channels to said second firing circuit input said means responsive to said monitoring means enabling said fuze to operate by any remaining channels upon failure of one channel; said detonator means being connected to the output of said firing circuit.

4,119,040
VARIABLE TIME FUZE

Russell E. Lerman, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 25, 1977, Ser. No. 818,487
Int. Cl.[2] F42C *9/10*
U.S. Cl. 102—249 **3 Claims**

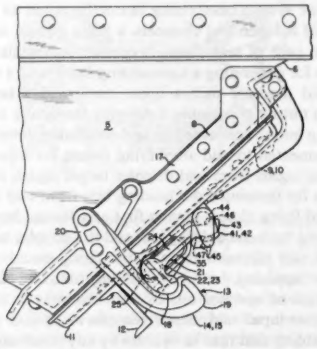


1. A fuze containing a pyrotechnic delay system for use in an explosive ordnance item comprising:
a hollow cylindrical base containing;
a spiral race positioned on the inner wall of said cylindrical base;
a delay cord positioned in said race and communicating with a booster charge;
an ogive rotatably mounted on said base;
an ignition bolt comprising;
a centerpost slidably mounted in and rotated by said ogive;
a circular head integrally mounted normal to said centerpost and peripherally extending into said race;
a primer positioned in said circular head, and
a channel communicating between the primer and an ignition charge at the periphery of the circular head for igniting said delay cord;
whereby a predetermined delay action is obtained by rotation of the ogive until the ignition charge in said circular head is positioned at a predetermined point along the delay cord in said race.

4,119,041
LOCKING MECHANISM FOR A PAIR OF RAILROAD HOPPER DOORS

James D. Hipp, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jul. 18, 1977, Ser. No. 816,368
Int. Cl.[2] B61D *7/18*
U.S. Cl. 105—308 R **9 Claims**

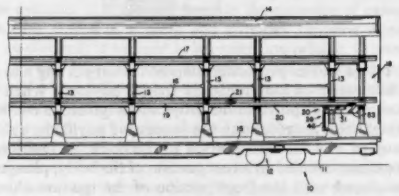


1. A locking mechanism for a pair of hopper doors which are laterally spaced side-by-side transversely of a railroad hopper car, comprising:
(a) at least one generally L-shaped cam rotatably mounted on each of the pair of hopper doors;
(b) at least one hook fixedly disposed adjacent each cam for interlocking engagement with the cams to hold the hopper doors in closed relation against a hopper door frame which is secured to a hopper of a railroad hopper car;
(c) means mounting the pair of hopper doors for unitary rotation to and from the hopper door frames;
(d) means mounting the cams for unitary rotation;
(e) a locking pawl carried by each of the hopper doors for interlocking engagement with the cams to keep the cams from rotating out of interlocking engagement with the hooks; and
(f) means mounting the pawls on the hopper doors for unitary rotation in a plane normal to the plane of the hopper doors, so that an operator can disengage the pawls from the cams and the cams from the hooks of both hopper doors from one side of the railroad car.

4,119,042
RAILWAY CAR COUNTERBALANCED TILTING DECK

David G. Naves, Calumet City, Ill.; Herman A. Aquino, Hobart, and Robert J. Mish, Merrillville, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Feb. 25, 1977, Ser. No. 772,200
Int. Cl.[2] B60P *3/08;* B61D *3/04, 3/16;* F16F *1/06*
U.S. Cl. 105—368 R **10 Claims**



1. A transportation device for carrying vehicles including a body having a lower vehicle supporting floor,
a plurality of longitudinally spaced upright side posts connected to said body on opposite side of said floor,
a deck supported on said side posts in vertically spaced relation above said floor,
said deck including a vehicle carrying first section rigidly connected to said post,
a second vehicle carrying section of said deck including hinge means connected to one end of said second section and to said first section whereupon the other end of said second section may be swung upwardly between raised and lowered positions, the improvement of,
a counterbalancing arrangement for said second deck section including:
a lever having a first end, a second end and pivot means intermediate said ends on said lever supporting said lever on one of said posts,
connecting means comprising a lost motion connection for pivotally joining the first end of said lever to the second section of said deck,
compressively loaded mechanical spring biasing means supported on one of said posts in substantially parallel relation thereto and slightly inwardly thereof and in shielded relation thereby,
said biasing means including link means pivotally connected to the second end of said lever, bracket means on said one post, and a spring operatively interposed between and connected to said link and bracket means and reactive thereagainst for exerting an upward force on the first end of said lever for raising said second section,

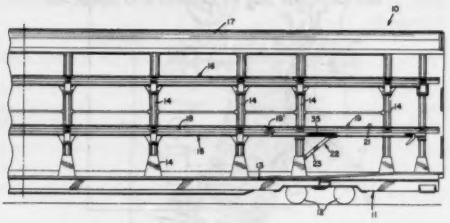
and support means on one of said posts for releasably supporting an outer end of said second section in a vehicle supporting position.

4,119,043

RAILWAY CAR COUNTERBALANCED TILTING DECK

David G. Naves, Calumet City, Ill.; Herman A. Aquino, Hobart, and Mitchell L. Morgan, Highland, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Mar. 9, 1977, Ser. No. 775,824
Int. Cl.[2] B60P *3/08*; B61D *3/04, 3/16*; F16F *1/06*
U.S. Cl. 105—368 R **9 Claims**



1. For a railway car for transporting vehicles including a car body having a floor,
a plurality of longitudinally spaced upright side posts connected to said body an opposite sides of the floor,
a deck supported on said side posts in vertical spaced relation above said floor,
said deck including a vehicle carrying first deck section rigidly connected to said side posts,
a second vehicle carrying deck section,
means hingedly supporting said second section with respect to said first section whereby one end of said second section may be pivotally moved between raised and lowered positions about an axis extending transversely of the car,
locking means on said car and second deck section selectively releasably locking said second deck section in said positions, the improvement of a support and movement limiting arrangement for said second deck comprising:
an arm extending diagonally between the second section and an adjacent post,
means pivotally supporting an end of said arm on the adjacent post to accommodate movement of said arm in a vertical plane extending longitudinally of the car,
second means pivotally connecting the other end of said arm to said second deck section,
said second pivotal means including guide means protectively carried within said second deck section and including stop means limiting longitudinal movement of said other end of said arm relative to said second deck in a direction substantially parallel to said second deck section for supportively limiting arcing movement thereof.

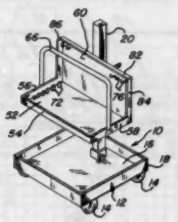
4,119,044

TOOL CADDY

Ralph E. Hines, Walden, Colo., assignor to Merlin J. Peterson, Walden, Colo., a part interest

Filed Jan. 17, 1977, Ser. No. 760,073
Int. Cl.[2] A47B *31/00*
U.S. Cl. 108—27 **6 Claims**

1. A tool caddy comprising:
a horizontal platform having wheeled support for movement over a surface;
a single post projecting rigidly upward centrally from near one margin of said platform;
a support assembly mounted on said post for movement in a vertical direction toward and away from said platform and including an upwardly-facing ledge, said ledge projecting horizontally away from opposing sides of said post;
means for latching said support assembly at selectively different heights above said platform;
a horizontal tray positionable above said platform;
a hanger affixed at one side of said tray and engagable over said ledge to support said tray removably above said



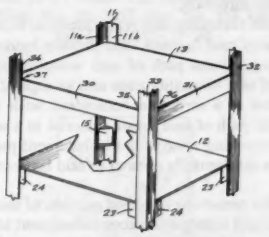
platform, said hanger including a pair of downwardly depending tongues spaced laterally outward from said tray and individually disposed transversely apart to engage over said ledge on respective opposing sides of said post;
and a handle secured to said tray and positioned thereabove in an orientation enabling disengagement of said hanger from said ledge upon an upward pull to the handle.

4,119,045

KNOCK-DOWN SHELVING STRUCTURE

Victor Galileo Michelotti, 6910 City Line Ave., Philadelphia, Pa. 19151

Filed Aug. 11, 1977, Ser. No. 823,829
Int. Cl.[2] A47B *47/00*
U.S. Cl. 108—156 **1 Claim**

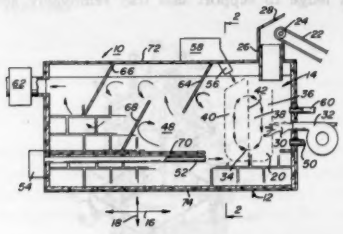


1. A shelving structure comprising upright, right-angular corner posts, each having at least one upstanding stud attached to its inner side at a level at which a shelf is to be supported, each stud being triangular in cross-section and presenting faces which are opposed to and are substantially parallel to the inner faces of the posts so that a space of uniform thickness exists between the two inner faces of the post and the opposing faces of the stud; and a shelf having depending flanges forming a triangular socket on the under side of the shelf to receive and fit the stud, said flanges including portions which snugly fit in said spaces between the stud and the corner post wherein the stud is attached to the corner post by spacers at the lower end of the stud and the spacers are of less width than the width of the stud faces so that a right-angular shaped pocket is formed between the lower end of the stud and the inner corner of the post and in which said flange portions include a tongue which is right-angular in cross-section and fits down in said pocket, and notches in said flange portions to receive said spacers.

4,119,046
INCINERATION SYSTEM AND METHOD

Jack C. Adams, 4317 S. 32nd Rd., Arlington, Va. 22206

Filed Aug. 11, 1976, Ser. No. 713,532
Int. Cl.[2] F23G 5/12
U.S. Cl. 110—244 19 Claims



1. A waste material incineration method within a horizontally directed furnace, including the steps of:
(a) inserting waste material into a combustion zone of said furnace in a direction substantially normal to said horizontal direction;
(b) vortexing said waste material in said combustion zone to form a vortexing zone;
(c) densifying said waste material in a first section of said vortexing zone, having a diminishing cross-sectional area in a direction coincident with a first displacement path of said waste material in said first section; and,
(d) expanding said waste material in a second section of said vortexing zone having an expanding cross-sectional area in a direction coincident with a second displacement path of said waste material in said second section, a first portion of said waste material being maintained in said vortexing zone prior to substantially complete combustion.

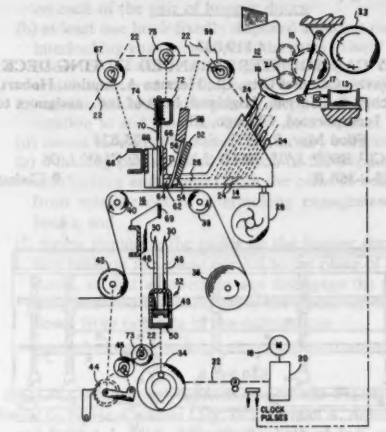
12. A waste material incineration system comprising:
(a) a horizontally directed furnace having a predetermined cross-sectional area contour in a plane normal to said horizontal direction;
(b) means for vortexing said waste material within a combustion zone of said furnace, said furnace having a diminishing cross-sectional path of said waste material in a first section of said vortexing zone and an expanding cross-sectional area in a direction coincident with a second displacement path of said waste material in a second section of said vortexing zone, said displacement paths being in a direction substantially normal to said horizontal direction; and,
(c) means for removing a second portion of said waste material from said combustion zone subsequent to substantially complete combustion of said waste material in said combustion zone.

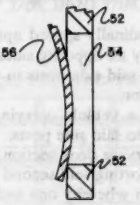
4,119,047
CUTTER MECHANISM FOR TUFTING MACHINE OR THE LIKE

Abram N. Spanel, 344 Stocton St., Princeton, N.J. 08540; P. Frank Eiland, Stamford; David R. Jacobs, New Canaan, both of Conn., and David N. Buell, Littleton, Colo., assignors to Abram N. Spanel, Princeton, N.J.

Filed Jun. 30, 1977, Ser. No. 811,969
Int. Cl.[2] D05C 15/16
U.S. Cl. 112—79 FF 15 Claims

1. In a tufting machine or the like, a cutting mechanism comprising:
a stationary blade having at least one opening therein through which at least one yarn strand projects; and
at least one reciprocating blade biased against said stationary blade and positioned so as to travel across said opening with said biasing causing said reciprocating blade to bow through the surface of the plane of said stationary blade facing said reciprocating blade into said opening thereby





severing the yarn strand as said reciprocating blade passes across said opening.

4,119,048
TEMPLATE CONTROL FOR SEWING MACHINES

Hans Scholl, Oerlinghausen-Lipperreihe, and Horst Bernewasser, Steinhagen, both of Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Mar. 11, 1977, Ser. No. 776,545
Int. Cl.[2] D05B 21/00
U.S. Cl. 112—121.12 6 Claims

1. A template control for relative movement between a workpiece and a tool on processing machines comprising:
a template including
a supporting plate,
a plurality of supporting bodies displaceably secured next to one another and parallel to one another on said supporting plate,
a plurality of tape carriers fastened to said supporting bodies, and
an elastic tape carried by said tape carriers for determining the shape of a contour of said template; toothed segments shiftably secured to each of said supporting bodies; spring means between said toothed segments and said supporting bodies for holding said toothed segments in an initial position;
a roller for following the contour of said template;
a gear pinion coaxially connected with said roller;
a drive shaft carrying said roller and said gear pinion; and
means for pressing said roller against said elastic tape and for engaging
said gear pinion with said toothed segments located next

to one another for forming substantially a gear rack when said toothed segments are in operating position.

5. A template control for use in a sewing device comprising:

a sewing machine having a reciprocating needle;

supporting means for said sewing machine and permitting movement of said sewing machine in two directions;

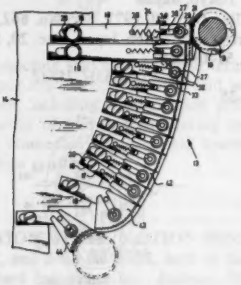
a template including

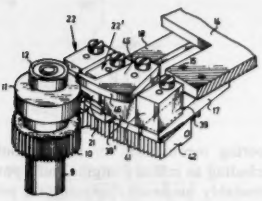
a supporting plate,

a plurality of supporting bodies displacblly secured next to one another and parallel to one another on said supporting plate,

a plurality of tape carriers fastened to said supporting bodies,

an elastic tape carried by said tape carriers for determining the shape of a contour of said template, and





a plurality of segments having a front surface and secured next to one another to said supporting bodies, for forming a further contour part of said template,

toothed segments shiftably secured to each of said supporting bodies;

spring means between said toothed segments and said supporting bodies for holding said segments in an initial position;

a drive shaft coaxially with said needle;

a roller secured to said drive shaft for following the contour of said template;

a gear pinion coaxially connected with said roller; and

means for pressing said roller against said elastic tape and for engaging said gear pinion with said toothed segments located next to one another and forming a gear rack with uninterrupted toothing.

4,119,049

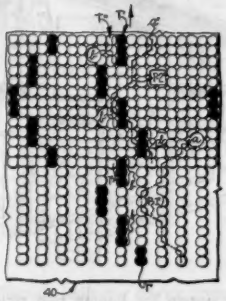
METHOD OF MAKING PATTERNED TUFTED FABRICS

Sandres Alfred Puckett, Laurinburg, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Division of Ser. No. 257,152, May 26, 1972, Pat. No. 3,908,570.
This application Feb. 28, 1975, Ser. No. 554,178
Int. Cl.² D05C *3/00*
U.S. Cl. 112—266 **8 Claims**

1. A method of making a patterned tufted pile fabric utilizing first and second parallel rows of spaced apart tufting needles with respective first and second sets of pile yarns carried by the first and second rows of needles and wherein the needles of the first row are staggered relative to the needles of the second row; said method comprising advancing a base material longitudinally past the rows of tufting needles, and forming respective rows of pile tufts of the first and second sets of pile yarns on the advancing base material by

(a) forming a longitudinal series of successive tufts from each of the respective first and second sets of pile yarns by inserting the first and second rows of needles through the base at longitudinally successive points, then



(b) shifting both rows of needles laterally of the base material to lay the first and second sets of pile yarns across the back of adjacent rows of tufts formed of the respective second and first sets of pile yarns, and then

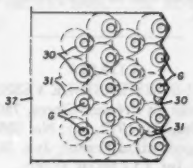
(c) repeating the steps as prescribed whereby pile tufts of each pile yarn of the first set are formed adjacent opposite sides of pile tufts of each pile yarn of the second set and vice versa in at least a portion of the fabric.

4,119,050

METHOD FOR THE MANUFACTURE OF A CAN LID HAVING A TRIPLE-FOLD, PUSHDOWN GATE

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Filed Jan. 10, 1977, Ser. No. 758,128
Int. Cl.² B21D *51/38*
U.S. Cl. 113—121 C **7 Claims**



1. A method for the manufacture of a gated can lid preparatory to attaching the lid to the body of a can, said method including the steps of:

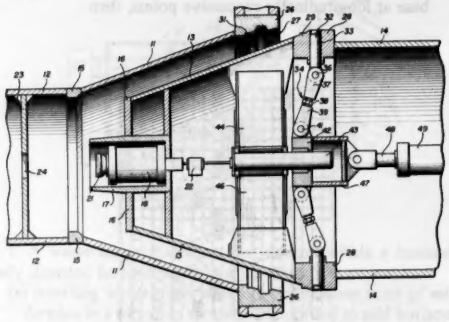
forming a triple-fold gate in a blank of metal which will constitute the can lid by drawing a cup in an aperture, folding the wall of the cup to form an interconnecting spacer strip underneath the aperture and a gate panel beneath the spacer strip, and at least partially outlining the gate with a cut in the panel underneath the spacer strip, the gate being disposed at a location offset from the center of the can lid and the drawing of the cup being such as to effect an area of disturbed metal about the gate aperture extending beyond the periphery of the can lid; and thereafter blanking the can lid through the area of disturbed metal, forming a peripheral circumferential chuck panel, a seaming panel, and a curl to complete the lid.

4,119,051

RIGID MOORING ARM QUICK DISCONNECT

James Allen Orndorff, Jr., Glen Ellyn, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Sep. 29, 1977, Ser. No. 837,689
Int. Cl.[2] B63B 21/56
U.S. Cl. 114—249 6 Claims



1. A locking system for joining two rigid yoke sections comprising:

a female truncated cone adapted to be connected at its smaller end to one of said yoke sections;

an annular ring attached to the circumference of said female cone at its larger end, said ring being provided on its inner face with a continuous circumferential slot;

a male truncated cone adapted to be connected at its larger end to the other of said yoke structures, said male cone being adapted to nest within said female cone;

a plurality of retractable shear keys circumferentially spaced around the larger end of said male cone and adapted to extend radially outwardly therefrom, said keys being positioned to enter said circumferential slot in said annular ring when said first and second cones are nested, whereby said cones are locked against axial displacement;

means for extending and retracting said shear keys; and

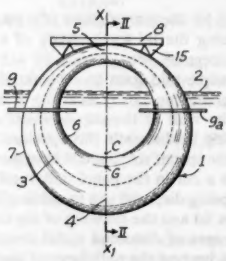
longitudinally reciprocable means attached to one of said cones for engaging the other of said cones when said cones are axially aligned in close proximity, said means being operable in one direction to draw said cones into nested relationship and in the opposite direction to separate said cones.

4,119,052

SEMI-SUBMERSIBLE VESSEL

Victor Rinaldi, 11, rue du Pré-aux-Clercs, 75007 Paris, France

Filed Jun. 27, 1977, Ser. No. 809,973
Claims priority, application France, Jun. 30, 1976, 76 19856
Int. Cl.[2] B63B 35/44
U.S. Cl. 114—264 11 Claims



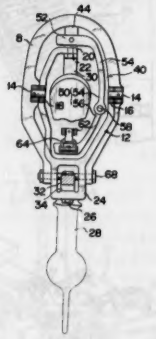
1. A semi-submersible vessel comprising a toroidal element in the form of a closed envelope defined by passing the center of a generating closed figure along a closed loop locus, said locus lying in a vertical plane and said closed figure being of variable size and having a maximum size at the lower part of the toroidal element and a minimum size at the upper part of the toroidal element so that the vessel's center of gravity is situated below its center of buoyancy, said toroidal element having a platform having a horizontal upper surface mounted on its non-immersed upper part.

4,119,053

STEERING MECHANISM FOR INBOARD-OUTBOARD MARINE DRIVE

Masahide Yoshitomi, Yokohama, and Atsuo Yonekura, Yamato, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 20, 1977, Ser. No. 862,587
Claims priority, application Japan, Dec. 20, 1976, 51-152018; Dec. 20, 1976, 51-152019
Int. Cl.[2] B63H 25/42
U.S. Cl. 115—35 6 Claims



1. In a steering mechanism for inboard-outboard marine drive units including an inboard engine and a power leg having a propeller rotatably mounted thereon, said power leg being adapted to be located outboard of the hull of a vessel and to be drivingly connected through transmission means having an input axis and first universal joint means to said engine;

the improvement comprising a stern plate mounted on said vessel, gimbal means rotatably mounted about a horizontal axis on said stern plate, first securing means for fixedly securing said power leg to said gimbal means at the lower end thereof, second securing means for fixedly securing said power leg to said gimbal means at the upper end thereof, axes of said first and second securing means being vertically aligned with each other, a tiller axis mounted on and through said stern plate, said tiller axis having a tiller mounted thereon, and steering arm means connected at its upper end to said tiller axis through second universal joint means, said steering arm means being divided into two parts and adapted to be pivoted with each other, lower end of said steering arm means being connected to said power leg through third universal joint means.

4,119,054

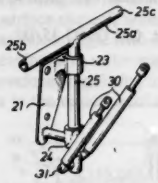
TRIMMABLE AND TILTABLE OUTBOARD MOTOR

Heinz Pichl, Upsala, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Aug. 23, 1977, Ser. No. 827,004
Claims priority, application Sweden, Aug. 27, 1976, 7609501
Int. Cl.[2] B63H 5/12
U.S. Cl. 115—41 HT 15 Claims

1. In an outboard motor comprising a motor and a transom mounting bracket comprising first bearing means establishing an upright steering axis for said motor, a T-shaped swingable

mounting element comprising an upright shaft rotatably disposed in said bearing means and having an upper end and a lower end portion and said element further comprising a horizontal transverse beam fixed to said shaft at its said upper end and disposed above said bearing means, said beam having opposite terminal end portions, second bearing means tiltably



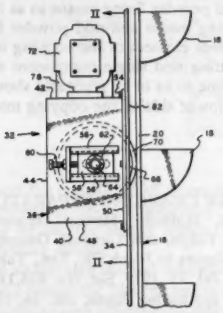
supportingly connecting said motor to said terminal portions, said lower end portion extending below said second bearing means, said motor including a connection portion disposed spacedly rearwardly of said second bearing means, and tilt adjusting means connected between said lower end portion and said connection portion.

4,119,055

TRACTION WHEEL MOTION SENSOR

Achard L. Ward, and John A. Ward, both of Jackson, Mich., assignors to Ward Industries, Inc., Jackson, Mich.

Filed Jan. 14, 1977, Ser. No. 759,349
Int. Cl.[2] B65G *43/00*; G01P *3/02*
U.S. Cl. 116—74 **3 Claims**



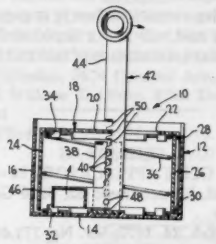
1. A traction wheel motion sensor for sensing the movement of a moving conveyor member comprising, in combination, a housing having an open end, mounting means defined on said housing for mounting said housing on a support adjacent the conveyor member to be sensed, a traction wheel shaft rotatably mounted on said housing, a traction wheel fixed on said shaft having a periphery extending from said housing open end, a friction material mounted upon said periphery of said traction wheel, said housing including a pair of spaced sidewalls, means adjustably mounting a bearing plate upon each sidewall for movement toward and away from said open end, a bearing mounted upon each bearing plate, said traction wheel shaft being rotatably mounted in said bearings, and said traction wheel being located within said housing intermediate said sidewalls whereby adjustment of said bearing plates varies the degree of extension of the periphery of said traction wheel from said open end, a rotary motion sensing device mounted on said housing having a rotatable input shaft, and power transmission means drivingly interconnecting said traction wheel shaft and said input shaft whereby said housing is mounted on a support adjacent the conveyor member to be sensed with said wheel periphery in engagement therewith and said input shaft is rotated at a rate dependent upon the rate of movement of the conveyor member.

4,119,056

WATER COLLECTION INDICATOR DEVICE

Robert F. Cahill, 4826 Kinglet, Houston, Tex. 77035

Filed Jun. 6, 1977, Ser. No. 803,887
Int. Cl.[2] G01F *23/08*
U.S. Cl. 116—118 A **18 Claims**



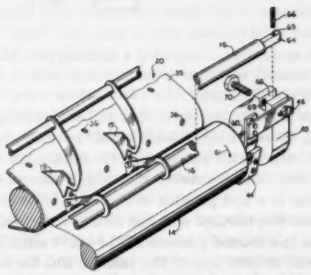
1. A water collection indicator device comprising
cup-like collector means for collecting water;
a visual signal means telescopingly positioned relative to said collector means;
bias means forcing said signal means away from said collector means; and
actuator means pivotally supported in said collector means including an arm engaging said signal means to prevent movement of said signal means away from said collector means and float means movable with rising water level in said collector means to pivot said actuator means and disengage said arm from said signal means whereby said bias means will move said signal means away from said collection means to produce a visual signal indicating collection of a predetermined amount of water.

4,119,057

GLUE APPLICATOR ROLL ASSEMBLY

Paul Wahnschaff, 3202 Marjan Dr., Atlanta, Ga. 30340

Filed Sep. 12, 1977, Ser. No. 832,657
Int. Cl.[2] B05C *1/02, 13/00*
U.S. Cl. 118—203 **5 Claims**



1. In apparatus for applying glue and the like to sheet-like material comprising a rotatable cylindrical roll including an annular surface and substantially flat end surfaces and mounted on an axle extending longitudinally therethrough, and means for applying liquid to said roll whereby sheet material contacts and is wetted by the roll, the improvement therein of a wiper blade assembly positioned at each end of said cylindrical roll with each wiper blade assembly comprising a support extending downwardly adjacent a flat end surface of said roll and

extending on the side of said axle on which said roll moves through a downward arc, a wiper blade mounted on the lower end portion of said support and including a substantially flat contact surface in engagement with said flat end surface of said roll, a liquid deflection surface merging at an approximately right angle with said flat contact surface and extending at a deflection angle from in front of said axle and in a downward direction toward the lower portion of said roll, said wiper blade further including a wiper leg extending from adjacent the flat end surface of said roll about the portion of annular edge of said roll adjacent the flat end surface of said roll and including a wiper leg contact surface in engagement with the annular surface of said roll and a liquid deflection surface extending from the annular surface of said roll in a downward direction.

4,119,058

GLUE APPLICATORS

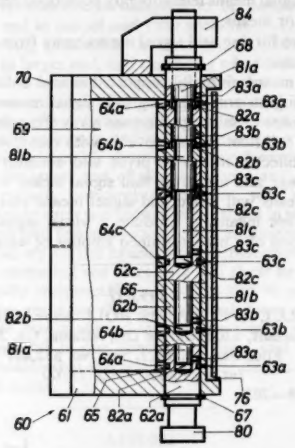
Alfred Schmermund, Kornerstrasse 62, 5820 Gevelsberg, Fed. Rep. of Germany

Filed Feb. 24, 1977, Ser. No. 771,489

Claims priority, application United Kingdom, Mar. 11, 1976, 9739/76

Int. Cl.² B05C 5/02

U.S. Cl. 118—411 **36 Claims**



1. A glue applicator comprising a housing provided with an applicator nozzle, with valve means, and with a passage to conduct glue to the nozzle, the valve means being interposed between the passage and the nozzle and comprising a bore in the housing, a valve slide slidable in said bore to control communication between the passage and the nozzle, the valve slide being provided with a conduit and with a closure surface so arranged that in a first position of the valve slide communication between the passage and the nozzle is provided by the conduit and in a second position of the valve slide the closure surface closes at least one of the passage and the nozzle, and surfaces defining a cavity in the valve slide, the valve slide being provided with a channel which, in said second position of the valve slide, communicates with the nozzle and said cavity, said surfaces being relatively moved, on movement of the valve slide into said second position, to so increase the volume of said cavity as to create a partial vacuum therein to suck glue from the nozzle into said channel, and being relatively moved, on movement of the valve slide into said first position, to so decrease the volume of said cavity as to create a pressure to expel glue from said channel back into the nozzle.

4,119,059

MOUNTING ARRANGEMENT FOR COMPONENT ELEMENTS OF A COPYING MACHINE

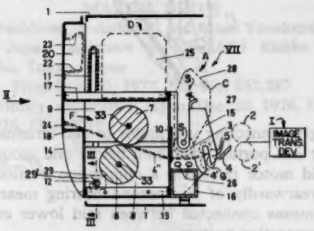
Kurt Moser; Helmut Wegmann, both of Gerlingen, and Reinhold Weigele, Korntal, all of Germany, assignors to Develop KG Dr. Eisbein & Co., Germany

Filed Apr. 15, 1976, Ser. No. 677,180

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1975, 2516436

Int. Cl.² G03G 15/00

U.S. Cl. 118—644 **43 Claims**



1. An arrangement for a copying machine having a copying machine housing means, the arrangement comprising:

means for applying a magnetizable powder onto a paper sheet on which an image is to be copied,

means for fixing the applied magnetizable powder to the paper sheet including at least two opposed pressure roller means for applying a high pressure to the paper sheet to fix the magnetizable powder thereon,

means for structurally interconnecting said powder applying means and said powder fixing means so as to form of said powder applying means and said powder fixing means a single component element of the copying machine, and

means for mounting said single component element of the copying machine so as to be pivotable about a single axis disposed at a lower side of the copying machine housing means.

4,119,060

TONER CHARGING APPARATUS

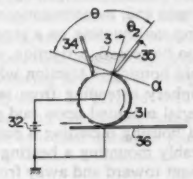
Nobuo Mochizuki, Matsudo; Hiromi Demizu, Yokohama; Hajime Oyama, Tokyo, and Teruyuki Ohnuma, Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1977, Ser. No. 815,110

Claims priority, application Japan, Jul. 16, 1976, 51/84712; Mar. 18, 1977, 52/29896

Int. Cl.² G03G 15/09

U.S. Cl. 118—653 **8 Claims**



1. In a development apparatus for use in a copying apparatus of the type having a development roller which is rotated in close proximity to a latent electrostatic image bearing recording material, a hopper for supplying an insulating toner onto said development roller and a developer regulating member with a flat top surface and a bevelled edge disposed at the outlet of said hopper, the improvement wherein said developer regulating member is positioned in the manner that the top surface of said developer regulating member forms an angle θ_1

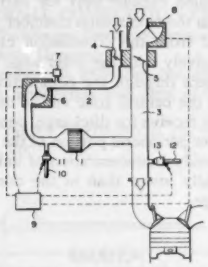
in the range of $0° < \theta_1 \leqq 90°$ with the bevelled surface of the edge of said developer regulating member and also forms an angle θ_2 in the range of $° \leqq \theta_2 < 90°$ with the plane including the top edge of said developer regulating member and the axis of said development rotation of said development roller and wherein upstream of said developer regulating member in the direction of rotation of said development roller, at least one additional developer regulating member is disposed in the manner that the surface thereof, which comes in contact with the toner, forms an actute angle with a tangent to a point on the surface of said development roller right under the top edge of said additional developer regulating member on the side of the tangent upstream in the direction of rotation of said development roller.

4,119,061

METHOD AND EQUIPMENT FOR CONTROL OF INTERNAL COMBUSTION ENGINE INCLUDING A FUEL-REFORMING DEVICE

Hirohiko Hoshi; Toshio Funayama; Kazuhiko Ishiguro, all of Toyota, and Hidetomo Umehara, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jun. 6, 1977, Ser. No. 803,948
Claims priority, application Japan, Nov. 18, 1976, 51-138648
Int. Cl.² F02B *43/08*
U.S. Cl. 123—3 **11 Claims**



1. A method for control of an internal combustion engine with a fuel-reforming device comprising:

sucking the air into the engine without passing through the fuel-reforming device;

sucking the air through the fuel-reforming device into the air not having passed the fuel-reforming device, downstream of the throttle valve utilizing the negative pressure developed downstream of the throttle valve;

mechanically controlling the air flow through the fuel-reforming device in accordance with the volume of the air not passing through the fuel-reforming device by interlocking the valve for controlling the flow rate of the air not passing through the fuel-reforming device, with the throttle valve;

detecting the volume of the air passing through the fuel-reforming device and electrically controlling the volume of fuel to be supplied to the fuel-reforming device in accordance with the detected volume of the air;

generating a reformed gas through reaction in the fuel-reforming device of the fuel and the air passing through the fuel-reforming device; and

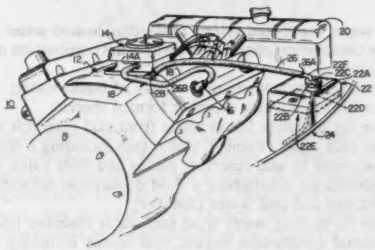
detecting the flow rate of the air not passing through the fuel-reforming device, ascertaining the total air sucked into the engine from the sum of the detected air volume not passing through the fuel-reforming device and the detected air volume passing through the device, calculating the necessary volume of fuel for the total air so that, when the fuel is insufficient, a necessary volume is supplied to the air not passing through the fuel-reforming device and, when the fuel is excessive, the volume of fuel supplied to the air passing through the fuel-reforming device is reduced.

4,119,062

AUTOMOTIVE HYDROCARBON AND WATER VAPOR INJECTOR SYSTEM AND UNIVERSAL HOSE CONNECTOR MEANS FOR SAME

William T. Trevaskis, 3674 Colonial Ave., Los Angeles, Calif. 90066, and William J. Olson, 8262 DePalma St., Downey, Calif. 90241

Filed Mar. 17, 1976, Ser. No. 667,503
Int. Cl.² F02D *19/00*
U.S. Cl. 123—25 R **9 Claims**



1. For use in combination with an internal combustion engine having a carburetor and a vacuum hose attached to an inlet fitting on said carburetor vacuum, a kit means providing a hydrocarbon and water-vapor injection system for a said engine, comprising:

reservoir means for receiving and containing hydrocarbon and water at a position adjacent said engine;

closure means on an upper side of said reservoir means having an air ingestion inlet means transmitting ingested air to a lowermost portion of said reservoir and a vapor outlet spout;

a vapor feed hose for connection between said vapor outlet spout and said vacuum hose on said engine; and

a universal hose connector means for connecting one end of said vapor feed hose to said vacuum hose, said connector means comprising;

an inlet fitting connectable within said vapor feed hose;

an elongated, tapered and pointed penetrating shank extending from said inlet fitting so shaped and so proportioned as to pierce at least one wall of said vacuum hose;

an intermediate portion of said connector engaging the said wall of said vacuum hose when said penetrating shank is fully inserted therein;

an intake bore formed in and extending through said inlet fitting into said penetrating shank; and,

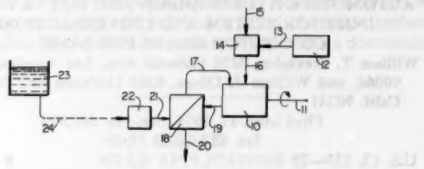
a metering orifice in said shank communicating with said intake bore so that the interior of said vacuum hose communicates with said bore through said orifice, said metering orifice for controlling the introduction of injected vapors into said vacuum hose at a predetermined rate, said orifice providing reduced vacuum pressure in said vapor feed hose and in said reservoir means;

whereby said vapor feed hose and said reservoir means are subjected to reduced pressures when compared to the pressure on said vacuum hose.

4,119,063
FEED SYSTEM FOR INTERNAL COMBUSTION ENGINES TO WHICH A FUEL-AIR MIXTURE AND WATER VAPOR ARE SUPPLIED

Werner Lohberg, 15, Elsener Strasse, 4790 Paderborn, Fed. Rep. of Germany

Filed Feb. 1, 1977, Ser. No. 764,597
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1976, 2604050
Int. Cl.[2] F02D *19/00*
U.S. Cl. 123—25 B 3 Claims



1. A water vapor feed system for feeding heated water vapor into the combustion chamber of an internal combustion engine comprising:

reservoir means containing a supply of liquid water;

a case having a water chamber formed therein;

means for directing liquid water from said reservoir means into said water chamber, said means including a feed line connected to said reservoir means and inlet valve means controllably establishing a fluid connection between said feed line and said water chamber;

means for feeding water from said water chamber into said internal combustion engine, said means including a discharge line and means further including outlet valve means controllably establishing fluid communication between said water chamber and said discharge line;

said outlet valve means including pressure responsive means responsive to a drop in pressure in said discharge line to a predetermined pressure to establish communication of said discharge line with said water chamber;

heating means for heating water received in said discharge line prior to being fed into said interior combustion engine;

said inlet valve means including pressure responsive means to establish communication of said water chamber with said feed line upon a drop in pressure in said water chamber to a predetermined pressure;

said predetermined case pressure being lower than said predetermined discharge line pressure, whereby said liquid water upon entering said water chamber is reduced in pressure to cause said liquid water to be at least partially vaporized to thereby cool said case and provide a heat barrier from said heating means during operation of said internal combustion engine.

4,119,064
RICH CORE STRATIFIED CHARGE SPARK IGNITION ENGINE WITH PERIPHERAL EXHAUST PORT

Edward D. Klomp, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 14, 1976, Ser. No. 705,064
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—30 C 9 Claims

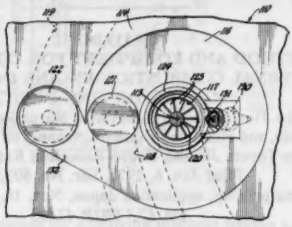
1. The combination in a spark ignition internal combustion engine of

means defining a closed end cylinder having walls and a central axis,

a piston reciprocable in said cylinder and cooperating with the cylinder closed end to define therebetween a variable volume combustion chamber free from connecting auxiliary ignition chambers,

means for forming in the combustion chamber a stratified charge of air-fuel mixture directed in a swirling pattern around the cylinder axis and having a core portion moving in a central zone of the combustion chamber surrounding the axis and an outer peripheral portion moving angularly along an outer edge portion of the combustion chamber outside the central zone and relatively more distant from the axis, said core portion of the charge being substantially richer in fuel than said outer peripheral portion, said charge forming means including a valve controlled inlet port connecting with the combustion chamber,

spark ignition means including a spark gap in the combustion chamber and extending into the central zone for igniting the richer mixture in the core portion of the charge, and

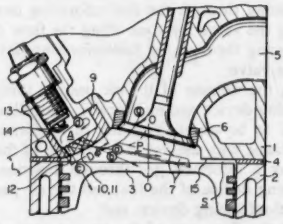


a valve controlled exhaust port for carrying combustion products from the combustion chamber, said exhaust port being spaced from the combustion chamber and connected exclusively with the outer edge thereof by a passage that opens through the combustion chamber walls distant from the central zone and is thereby adapted to preferentially receive for discharge, combustion products from the outer peripheral portion of the burned charge in which the residual concentration of unburned hydrocarbons is initially lower than in the core portion of the burned charge.

4,119,065
INTERNAL COMBUSTION ENGINE HAVING AN AUXILIARY COMBUSTION CHAMBER AND A METHOD OF CONTROL OF COMBUSTION IN SAID INTERNAL COMBUSTION ENGINE

Masaaki Noguchi, Nagoya; Yukiyasu Tanaka, Okazaki, and Katuhiko Motosugi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 22, 1976, Ser. No. 743,708
Claims priority, application Japan, Dec. 26, 1975, 50-159017
Int. Cl.[2] F02B *19/10, 19/16*
U.S. Cl. 123—32 SP 28 Claims



1. A method of control of combustion in an internal combustion engine having an auxiliary combustion chamber and a main combustion chamber defined by a cylinder, a piston and a cylinder head, where a flame generated in the auxiliary combustion chamber is spurted into the main combustion chamber as a torch jet to ignite and burn an air-fuel mixture in the main combustion chamber, said method comprising:

supplying a homogeneous lean air-fuel mixture having an air-fuel ratio lower than the stoichiometric air-fuel ratio into the main combustion chamber at the intake stroke;

supplying at the intake stroke a part of said air-fuel mixture into the auxiliary combustion chamber through a first passage to discharge the residual gas formed in the auxiliary combustion chamber at the combustion stroke of the preceding cycle into the main combustion chamber through a second passage to thereby scavenge the auxiliary combustion chamber;

forming a suitable swirl in the auxiliary combustion chamber at the compression stroke by the air-fuel mixture flowing into the auxiliary combustion chamber through said first and second passages;

igniting the air-fuel mixture flowing in a swirl, the propagation of a flame in the radial direction of the swirl being controlled by the centrifugal force of the swirl thereby controlling the combustion rate in the auxiliary combustion chamber, and;

spurting a torch jet into the main combustion chamber through said first and second passages to ignite and burn the air-fuel mixture in the main combustion chamber at the initial stage, whereby the contents of poisonous components in an exhaust gas are reduced without reduction of the performance of the engine.

4,119,066

INTERNAL COMBUSTION ENGINE

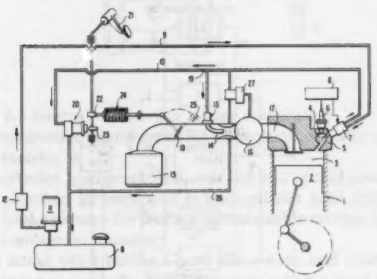
Robert Happel, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Jun. 16, 1976, Ser. No. 696,691

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1975, 2527406

Int. Cl.² F02B *19/10, 19/16*

U.S. Cl. 123—32 SP **20 Claims**



1. An internal combustion engine operating with applied ignition and minimum fuel injection, which comprises ignition chamber means, main combustion space means having a variable volume, a respective ignition chamber means terminating in the corresponding main combustion space means, fuel circulation means including a fuel tank, a feed line, and a return line, an injection nozzle means coordinated to the ignition chamber means and disposed within the fuel circulation means, means for supplying to the fuel circulation means a fuel quantity exceeding a discharge quantity of the injection nozzle means coordinated to the ignition chamber means, throttle means in the return line of the fuel circulation means downstream of the injection nozzle means coordinated to the ignition chamber means, and a throttle valve means arranged in a suction pipe of the engine, characterized in that a main injection means is provided for supplying a main injection quantity of fuel to the main combustion space means, a line means is provided and communicates the main injection means with the return line such that the main injection quantity is supplied from the return line, and control means are provided for controlling an adjustment of the throttling means and throttle valve means in dependence on a load of the engine so as to control the main injection quantity as a function of the load.

4,119,067

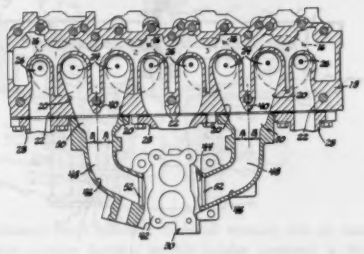
ENGINE WITH CHARGE EQUALIZING INTAKE MANIFOLD

William L. Aldrich, Lake Orion, and John M. Sawruk, Pontiac, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 6, 1976, Ser. No. 747,962

Int. Cl.² F02B *75/18;* **F02M** *29/04*

U.S. Cl. 123—52 MB **4 Claims**



1. In combination in an internal combustion engine,

means defining four variable volume combustion chambers aligned longitudinally and grouped in two longitudinally spaced pairs of chambers, each chamber having an intake port with the intake ports of each pair of chambers being closely spaced longitudinally at their ends for connection with a common manifold runner and the ends of the closely spaced pairs of ports being longitudinally spaced a substantial distance apart,

means for operating said chambers in sequential cycles including intake events which occur sequentially in the chambers of each pair and alternately in the separate pairs of chambers,

an intake manifold having a central plenum and a pair of runners extending oppositely from said plenum, each of said runners being connected with one of said spaced pairs of intake ports such that the sequential chamber intake events occurring alternately in the spaced pairs of chambers cause alternate pulses of fluid motion in the manifold runners with the flow dynamics tending to cause delivery of a relatively smaller charge to the first one of the sequentially timed combustion chambers of each pair,

and the improvement wherein the ends of the manifold runners are offset at their connections with their respective pairs of intake ports in directions toward said first timed chambers, such that the runners are more directly aligned with the intake ports of said first timed combustion chambers of the sequentially timed pairs than with the intake ports of the last timed chambers of such pairs to an extent to offset the manifold pulsing effect and tend to equalize charge distribution.

4,119,068

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

John J. Csonka, 625 Linwood Ave., Buffalo, N.Y. 14209, and Albert B. Csonka, 109 Larchmont Rd., Buffalo, N.Y. 14214

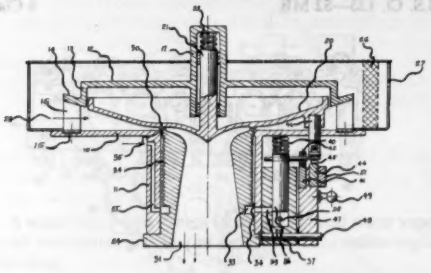
Filed Apr. 9, 1976, Ser. No. 675,303

Int. Cl.² F02M *7/22*

U.S. Cl. 123—117 R **4 Claims**

1. A carburetor having a housing including a generally discoidal wall and a hub portion extending axially from the central portion thereof, an air valve having a relatively flat surface directed toward and concentric with said discoidal wall and having a central conoidal portion having its apex of

said surface directed toward the interior of said hub portion, said housing wall and said valve surface defining an air passage converging radially inwardly to form an annular valving constriction and thence widening into the interior of said hub portion, said hub portion having an annular cylindrical fuel passage terminating at its upper end in a circumferential series of axially extending micro-passages for directing liquid fuel into said air passage substantially at right angles to the direction of air flow at said valving constriction whereby the fuel is atomized by the air flow at said constriction, means for selectively adjusting said air valve toward and away from said



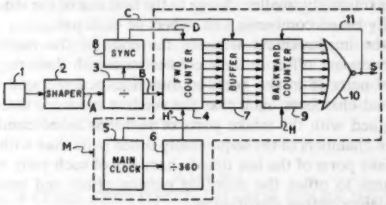
discoidal wall to regulate the volume of air drawn into an engine with which said carburetor is associated, means for supplying predetermined measured amounts of pressurized fuel to said cylindrical fuel passage and valve means for regulating said supply, said air valve adjusting means and said pressurized fuel regulating means having a common control means whereby the ratio of air to fuel is predetermined and variable at various positions of said control means, and ignition timing adjustment means connected with said common control means whereby the ignition timing has a predetermined setting for each position of said air valve and fuel valve.

4,119,069

ELECTRONIC IGNITION WITH ANGULAR TRANSCODER

Jean-Claude Perrin, Domaine de la Quietude No. 13, 06800 Cagnes sur mer, France

Filed Nov. 1, 1976, Ser. No. 737,458
Int. Cl.[2] F02P *5/04*; F02B *3/00*
U.S. Cl. 123—117 D **8 Claims**



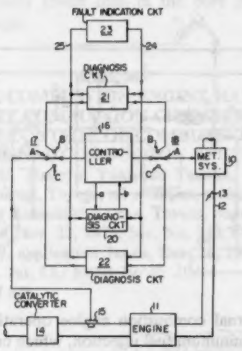
1. Apparatus for delivering utilization pulses corresponding to successive, substantially equidistant angular positions of a rotating member, comprising: speed pick-up means for detecting at each revolution of the rotating member its passage through at least one predetermined angular position and to deliver a pulse in response to said passage; means for delivering in response to the pulses produced by the pickup means input signals having a period equal to the period of rotation of said rotating member; time base generator means for delivering first and second clock signals whose frequencies are fixed and in a predetermined ratio; first counter means for counting the number of second clock signal pulses produced between two successive pulses of said input signal; first buffer memory means for storing said number during the next counting period of said first counter means; first backward counter means for counting down said number stored in the buffer memory means in synchronism with said first clock signal; first gate means for producing an output pulse at the end of each countdown of said number by the first backward counter means and to apply an input to said backward counter means for controlling a new count down of said number such that said output pulses represent successive angular positions of said rotating member and the ratio between one revolution of said rotating member and the angular distance separating two of said successive positions is equal to said predetermined ratio; first pre-programmed read-only memory means for storing a digitized code related to angular speed of said rotating member; said read-only memory means connected to receive as input said number stored by said buffer memory means and responsive thereto to produce a number dependent on said digitized code; second counter means operable under control of said input signals to receive said number representing said digitized code produced by said first read-only memory means and then to receive and count said output pulses from said first gate means up to a predetermined count value; and a second gate means for delivering said utilization signal when said second counter means has reached said predetermined count value.

4,119,070

CLOSED-LOOP MIXTURE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH CIRCUITRY FOR TESTING THE FUNCTION OF CLOSED LOOP

Masaharu Asano, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed May 6, 1976, Ser. No. 683,658
Claims priority, application Japan, May 12, 1975, 50-54612; Jun. 20, 1975, 50-83651[U]
Int. Cl.[2] F02M *7/00*
U.S. Cl. 123—119 EC **8 Claims**



1. A closed-loop mixture control system for an internal combustion engine, comprising an exhaust composition sensor for in use generating a first signal representing and corresponding to the concentration of a composition of the exhaust emissions from an internal combustion engine, a first comparator to compare the first signal with a reference level to generate a second signal indicating whether the air-fuel ratio of the mixture in said engine is above or below a predetermined value, a control circuit for generating a third signal representing and corresponding to an amplification of the second signal in accordance with a predetermined response characteristic, means for supplying the mixture to said engine in accordance with the third signal, means for generating a recurrent series of binary signals occurring in accordance with a predetermined bit pattern for application to said mixture supplying means instead of the signal from said control circuit to thereby produce artificial fluctuations of the air-fuel ratio, means for storing said bit pattern in a serial form, a first shift register receptive of said

first signal resulting from said artificial fluctuations of the air-fuel ratio, a second shift register receptive of said stored bit pattern and effective to shift the received bit pattern in synchronism with said first shift register, a plurality of exclusive-OR gates connected between said first and second shift registers, and a second comparator for comparing a sum of the outputs from said exclusive-OR gates with a fixed reference to generate an output when the degree of similarity between the stored bits of said first and second shift registers exceeds a predetermined level.

4,119,071

EXHAUST GAS RECIRCULATING DEVICE IN AN INTERNAL COMBUSTION ENGINE

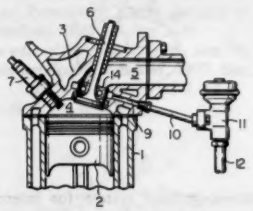
Kyo Hattori, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 4, 1976, Ser. No. 738,957

Claims priority, application Japan, Sep. 17, 1976, 51-110697

Int. Cl.² F02N *25/06*

U.S. Cl. 123—119 A **15 Claims**



1. An internal combustion engine comprising:

a combustion chamber having a piston reciprocally mounted therein;

a cylinder head positioned over one end of said combustion chamber, an inner wall in said cylinder head defining an intake passage for feeding a combustible mixture into said combustion chamber;

an intake valve having a head and a stem, said intake valve being reciprocally mounted in said cylinder head to move along the axis of the stem to control flow from said intake passage into said combustion chamber;

an exhaust passage;

a spark plug in said combustion chamber, at least two exhaust gas outlet ports disposed in the inner wall defining said intake passage at a position near to the valve head of said intake valve, said ports being circumferentially spaced from each other around the axis of said stem to recirculate the exhaust gas into the intake passage at the time of the intake stroke of the engine, said circumferentially spaced exhaust ports being arranged to alternately stratify said combustible mixture and said recirculated exhaust gas and to supply the alternately stratified layers of said combustible mixture and said recirculated exhaust gas to substantially the entire interior of said combustion chamber except in the region of said spark plug where only said combustible mixture is supplied; and,

an exhaust gas recirculating passage connecting said exhaust gas outlet ports with said exhaust passage and having therein valve means for controlling the flow rate of the recirculated exhaust gas.

4,119,072

CLOSED LOOP AIR FUEL RATIO CONTROL SYSTEM USING EXHAUST COMPOSITION SENSOR

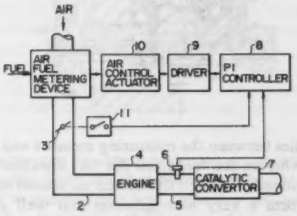
Masaharu Asano, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Division of Ser. No. 664,226, Mar. 5, 1976, abandoned. This application Jun. 14, 1977, Ser. No. 806,347

Claims priority, application Japan, Jul. 3, 1975, 50-26959; Jul. 3, 1975, 50-26960

Int. Cl.² F02M *7/00*; F02B *3/00*

U.S. Cl. 123—119 EC **1 Claim**



1. A closed loop mixture control system for an internal combustion engine having an air intake passage, a throttle therein, means for supplying air and fuel thereto and exhaust means, comprising:

means for generating a first signal indicative of the deviation of the air-fuel ratio within said exhaust means from a fixed reference;

an integrating controller including integrator means for providing integration of said first signal to suppress a control oscillation caused by a time lag inherent in the closed loop, said integrator means including an operational amplifier having a first input receptive of said first signal and a second input connected to a predetermined potential, and a capacitor connected between said first input and output of said amplifier to generate a control signal effective to cause said air fuel supply means to vary the ratio of air and fuel supplied to said engine in accordance with the direction of the deviation of said air-fuel ratio from said fixed reference;

means for sensing when said throttle is in a fully open position; and

switching means selectively providing a short-circuit path across said capacitor in response to the sensing means so that, with the throttle fully open, the output from said integrating controller is operated in a proportional mode and maintained at such a value that said air fuel supply means is caused to supply an enriched mixture to said engine, and when said throttle is varied from said fully open position to a part throttle position, said integrating controller commences operation in an integration mode for integration of said first signal and generates an output effective to cause said air fuel supply means to supply a leaner mixture to said engine.

4,119,073

SPARK IGNITION FUEL INJECTION INTERNAL COMBUSTION ENGINE

Dieter Stock, Frankenbach, and Johannes Steinwart, Obersulm-Willsbach, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

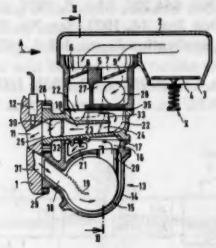
Continuation-in-part of Ser. No. 713,702, Aug. 12, 1976, abandoned. This application Nov. 5, 1976, Ser. No. 739,254

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 D **12 Claims**

1. In a spark-ignition fuel-injection internal combustion engine, with a measuring member in its induction system to measure the air flow and control the amount of fuel supplies to a fuel injection nozzle positioned in the induction system

downstream of the measuring member, in which part of the induction system that carries solely air is split up into a part-load passage and a full-load passage and wherein the improvement comprise a heater provided in a region of the part-load



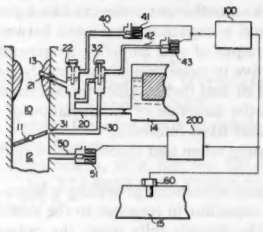
passage that lies between the measuring member and the injection nozzle wherein the fuel from the fuel injection nozzle is evaporated immediately into the heated air stream so that it is possible to form a very homogeneous and well pre-heated fuel-air mixture.

4,119,074

APPARATUS TO CONTROL THE RATIO OF AIR TO FUEL OF AIR-FUEL MIXTURE APPLIED TO AN INTERNAL COMBUSTION ENGINE

Kenji Masaki, Yokohama, and Shigeo Aono, Seki, both of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Nov. 26, 1975, Ser. No. 635,719
Claims priority, application Japan, Nov. 29, 1974, 49/137546
Int. Cl.[2] F02M *23/04*
U.S. Cl. 123—124 B **11 Claims**



1. A combination with an apparatus to control the ratio of air to fuel of an air-fuel mixture being admitted into an internal combustion engine having an intake passage, an exhaust passage and a throttle valve located in said engine intake passage, including

means sensing at least one engine operating variable which is related to the ratio of air to fuel of the mixture delivered to the engine and generating an output signal proportional to the sensed variable,

a main fuel passage for delivering fuel to a portion of the engine intake passage upstream of the throttle valve and having a main air bleed,

a slow fuel passage for delivering fuel to a portion of the engine intake passage in the neighborhood of the closed throttle position and having a slow air bleed,

a first additional air passageway connected between said main air bleed and the atmosphere,

a second additional air passageway connected between said slow air bleed and the atmosphere,

a first electromagnetic means provided in said first additional air passageway to control the rate of air passing therethrough,

a second electromagnetic means provided in said second additional air passageway to control the rate of air passing therethrough,

passage means conducting air and fuel components of a combustible charge directly into a portion of the engine intake passage downstream of the throttle valve,

a third electromagnetic means provided in said passage means to control the rate of said components passing therethrough, and

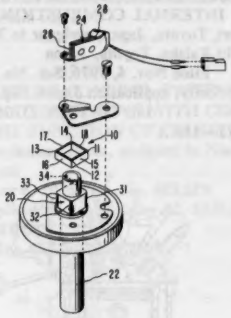
electronic control means electrically connected with said first, second and third electromagnetic means to control the same in accordance with said output signal.

4,119,075

DISTRIBUTOR SPRING FOR USE IN A MAGNETIC SENSOR

Ronald C. Grable, Santa Clara, Calif., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 9, 1976, Ser. No. 713,023
Int. Cl.[2] F02P *1/00*
U.S. Cl. 123—146.5 A **6 Claims**



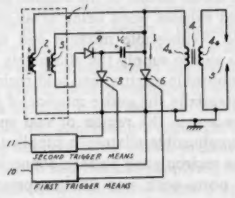
1. An electronic-ignition system for internal-combustion engines, the system having a magnetic-pulse unit using a sensor that produces a voltage trigger pulse in response to the rotation of a distributor shaft past a pole of permanent magnet, the improvement comprising a flat-leaf spring having a plurality of relatively sharp corners mounted over a portion of the shaft so that the corners of the spring pass in close proximity to and disturb the magnetic field around the permanent magnet as the shaft rotates.

4,119,076

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hiroo Sato, Susono, Japan, assignor to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Aug. 16, 1976, Ser. No. 714,803
Claims priority, application Japan, Aug. 19, 1975, 50-100297; Aug. 19, 1975, 50-100298; Sep. 5, 1975, 50-107872
Int. Cl.[2] F02P *1/00*
U.S. Cl. 123—148 E **4 Claims**



1. An ignition system for an internal combustion engine

having an AC generator rotating in synchronism with the engine, said ignition system comprising;

an ignition coil having a primary winding and a secondary winding,

a first armature winding disposed in the generator to supply a current to said primary winding of said ignition coil,

a first thyristor connected in parallel with said first armature winding, a second armature winding disposed in the generator,

a capacitor connected through rectifier means across said second armature winding,

a second thyristor for applying the voltage built up on said capacitor reversely across the anode and cathode of said first thyristor,

first trigger means for triggering said first thyristor at a first angle,

and second trigger means for triggering said second thyristor at a second angle,

whereby conduction of said second thyristor causes turn-off of said first thyristor and resultant interruption of the current through said first thyristor leads to a large current through said primary winding of said ignition coil.

4,119,077

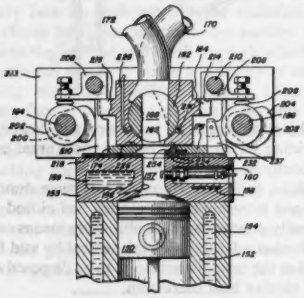
ROTARY VALVE SYSTEM FOR MOTORS AND THE LIKE HAVING IMPROVED SEALING MEANS

Tony E. Vallejos, Paramount, Calif., assignor to Alto Automotive, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 653,195, Jan. 28, 1976, Pat. No. 4,098,238. This application May 31, 1977, Ser. No. 801,634

Int. Cl.[2] F01L *3/00, 1/28*

U.S. Cl. 123—188 B **25 Claims**



1. In a rotary valve system for a motor and the like, including a flow conduit terminating in a combustion chamber, and a rotary valve for metering fuel flow through said flow conduit, the improvement comprising, in combination:

a pair of rotatable camshafts positioned on opposite sides of said flow conduit,

means for causing synchronous rotation of said camshafts in a manner correlating with the rotation of said rotary valve;

valve plate member means positioned between said camshafts, said plate member means being transversely movable relative to said flow conduit to define a sealing surface across said flow conduit in a first position, and to define an open aperture across said flow conduit in a second position; and

cam means on each camshaft in communication with said plate member means to cause said plate member means to respectively move between said first and second positions as said camshafts rotate.

4,119,078

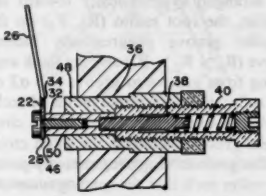
ADJUSTABLE TYPE ARROW REST FOR A BOW

Jack K. Wilson, and Robert S. Wilson, both of Rte. 16, Box 200, Springfield, Mo. 65807

Filed Jul. 19, 1976, Ser. No. 706,816

Int. Cl.[2] F41B *5/00*

U.S. Cl. 124—41 A **7 Claims**



1. An arrow rest for attachment to an archery bow comprising a movable plate member adapted to be disposed at and connected to one side of a bow, an arrow rest secured to said plate member to support the bottom of an arrow, said plate member having an arrow pressure point contact area which contacts the side of an arrow when the bottom of the arrow is on said arrow rest, connecting means for connecting the plate to a bow including only one telescoping rod member extending through an opening in the side of a bow, means attaching said plate member to a cantilevered position of said rod member, means acting on said rod member to normally bias said plate member and said arrow rest away from a bow while permitting movement of said plate member and said arrow rest and pressure point contact area toward a bow against the bias of said biasing means as an arrow is shot from a bow, and means interlocking said rod member and the remainder of said connecting means to restrain said rod member from rotating motion while permitting motion of said plate member and said arrow rest and pressure point contact area toward a bow, said interlocking means and said connecting means having longitudinal axes that are substantially coextensive with each other when the arrow rest is mounted on a bow.

4,119,079

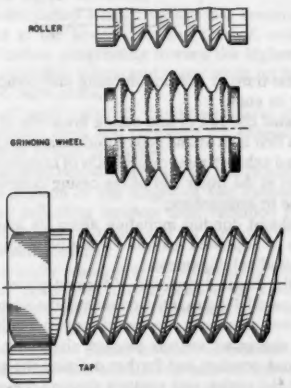
ROLLER FOR PRODUCING A PROFILE ON A GRINDING WHEEL

Erwin Junker, Talstr. 78, 7611 Nordrach, Fed. Rep. of Germany

Continuation of Ser. No. 669,249, Mar. 22, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 828,011

Int. Cl.[2] B24B *53/06*

U.S. Cl. 125—11 CD **6 Claims**



1. A profiling roller for producing a profile on a grinding

wheel for a thread grinding machine operating with longitudinal feed, said profiling roller comprising, in combination: at least one finishing roller groove in the center of the roller with a flank angle ($\alpha 1$), root radius (R_1), pitch circle radius (1) and groove depth corresponding to the final thread form to the produced by the grinding wheel, and a plurality of modified preliminary roller grooves, said preliminary grooves being on each side of said finishing roller groove and having decreasing groove depth arranged symmetrically toward the opposite ends of the roller, the root radius (R_2, R_3) on the modified preliminary roller groove progressively increasing from groove to groove ($R_3 > R_2 > R_1$) and the flank angle progressively decreasing from groove to groove ($\alpha 3$ $\alpha 2$ $\alpha 1$) towards the ends of the roller, the pitch circle radius of each successive preliminary roller groove, relative to the pitch circle radius of the next adjacent groove including the pitch circle radius of the finishing roller groove being progressively greater towards the ends of the roller such that the spacing measured from the intersecting point of the flank of each roller groove with its associated pitch circle at right angles to the corresponding flank of the next roller grooves arranged towards the roller ends, when grooves are projected over each other, is substantially equal to the groove depth difference of the next adjacent roller groove ($x_1 \cong y_1$; $x_2 \cong y_2$).

4,119,080

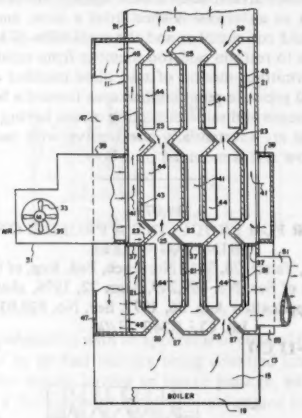
HEAT TRANSFER AND CONDITIONING UNIT

Robert J. Smith, 4511 E. Snover, Silverwood, Mich. 48780

Division of Ser. No. 581,201, May 27, 1975, Pat. No. 3,981,291. This application Sep. 20, 1976, Ser. No. 724,774

Int. Cl.[2] F24H *3/10*

U.S. Cl. 126—110 R **5 Claims**



1. A heat transfer and conditioning unit comprising a casing closed at its ends;

an exhaust conduit in said casing inwardly of its walls, having a first inlet at one end of said casing adapted to receive heated exhaust gases or products of combustion; and a first outlet at the other end of the casing communicating with a flue to atmosphere;

said exhaust conduit including along its length a series of pairs of opposed parallel laterally elongated plates in longitudinal alignment;

inwardly directed opposed V-formed plates at the ends of said parallel plates interconnecting the adjacent plates and defining therewith a series of longitudinally spaced laterally elongated venturi passage along the length of said exhaust conduit; and further defining the exhaust conduit inlet and outlet; said venturis slowing down movement of and more evenly distributing the products of combustion through said exhaust conduit to said flue, so that increased quantities of heat are transferred to the walls thereof;

the walls of said exhaust conduit being spaced from said casing defining an independent fresh air heating chamber along the walls of said casing and exhaust conduit for the conductive transfer of heat to fresh air passing therethrough;

an inlet to said fresh air heating chamber extending into said casing;

an outlet for said fresh air heating chamber extending from said casing;

and air moving means connected to said air inlet for delivering air into and through said heating chamber, so that said fresh air moves along the walls of said exhaust conduit throughout the length of said casing.

4,119,081

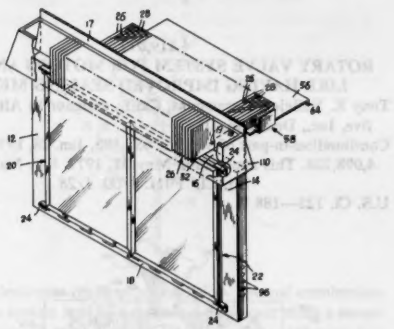
FIREPLACE ENCLOSURE AND INTEGRAL HEAT-EXCHANGER

Harrison F. Edwards, Norwich, N.Y., assignor to Sunbeam Corporation, Chicago, Ill.

Filed Jun. 23, 1977, Ser. No. 809,185

Int. Cl.[2] F24C *15/10*

U.S. Cl. 126—140 **20 Claims**



1. A combination fireplace enclosure and heat-exchanger unit for providing supplemental heat to room areas external to a fireplace, comprising in combination:

(a) a fireplace enclosure frame and closure doors carried thereby and movable between open and closed positions,

(b) a thermally conductive heat absorbing means constituted of high heat conductivity metal, carried by said frame and mounted at the rear thereof, so as to be disposed above the fire and receive heat therefrom,

(c) a large plurality of thermally-conductive heat radiating elements carried by said frame and mounted at the front thereof, so as to be exposed to air circulating in the room and to transfer heat thereto, and

(d) thermally conductive means carried by the frame and constituted of high heat conductivity metal, connecting said heat-absorbing means to said radiating elements to provide for heat transfer therebetween.

4,119,082

SUBAQUEOUS HEATER APPARATUS

Katsuya Miyamori, 4-22-7, Ryouke, Urawa, Saitama, Japan; Toru Murai, Kanagawa, and Osamu Shitamori, Yokohama, both of Japan, assignors to Katsuya Miyamori, Japan

Filed Mar. 25, 1977, Ser. No. 781,414

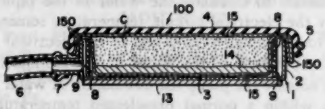
Claims priority, application Japan, Mar. 26, 1976, 51/33234

Int. Cl.[2] F24J *1/02*

U.S. Cl. 126—263 **10 Claims**

1. A subaqueous heater apparatus, comprising: a generally water-tight container; a substance within said container that will exothermically chemically react with water; a water ab-

sorbent member within said container and in contact with said substance; and means to supply said absorbent member in the container with water from outside the container by capillary



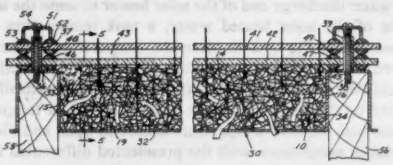
action, so that the heat evolved upon the chemical reaction between said substance and water supplied to said absorbent member by said means is used as the heat source for the heater apparatus.

4,119,083

SOLAR ENERGY ABSORBING BODY AND COLLECTOR

Wilfred L. Heyen, 711 Florida Rd., and Keith D. Olinger, P.O. Box 2031, both of Durango, Colo. 81301

Filed May 16, 1977, Ser. No. 796,978
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—270 **9 Claims**



1. A solar energy absorbing body comprising:

a plurality of discrete solar energy absorbing surfaces in a random arrangement at different depths relative to a boundary face through which solar radiation is passed, said surfaces being spaced from one another to provide interstices throughout said body through which incoming solar radiation passes to strike a plurality of said discrete absorbing surfaces at different depths relative to said boundary face to cause said surfaces to become heated and through which a stream of air is passed to transfer heat from said surfaces,

said absorbing surfaces being provided by a coating on a loosely arranged mat of glass fibers, said coating being a mixture of carbon black particles and a urea-formaldehyde, water-soluble, adhesive resin that bonds said particles to said glass fibers and said glass fibers together at points of contact and gives strength to the body.

4,119,084

BUILDING WITH PASSIVE SOLAR ENERGY CONDITIONING

Robert E. Eckels, 2101 Youngfield, Golden, Colo. 80401

Filed May 11, 1977, Ser. No. 795,786
Int. Cl.[2] F01K *19/10*
U.S. Cl. 126—270 **12 Claims**

1. A building arranged for solar heating and air circulation, positioned to have a sunny side and a shaded side, comprising:

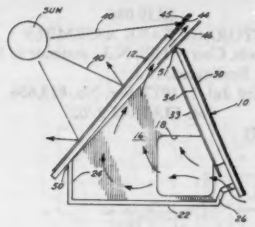
(a) a generally closed structure providing an interior with ingress and egress and at least one upright wall;

(b) said upright wall including solar radiation absorbing means covering a substantial area and having a black heat absorbing coating and a mono-layer of transparent focusing spherical elements thereon;

(c) an internal heat storage unit arranged adjacent the upright wall and in heat transfer relation therewith and in heat transfer relation with the interior of the building;

(d) upper vent means arranged for selective opening for discharge of heated air from the building; and,

(e) lower vent means arranged for a selective opening for the building on the shaded side thereof so that heated air from the inside of the upright wall moves outwardly through



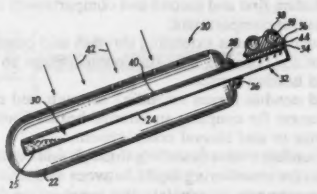
the upper vent means and air from the shaded side enters the lower vent means.

4,119,085

SOLAR ENERGY COLLECTOR

Gregory W. Knowles, Huntington; Odd E. Sangesland, Plainview; Henry J. Vroom, Commack, and Robert W. Madey, Huntington Station, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Division of Ser. No. 615,461, Sep. 22, 1975, Pat. No. 4,059,093.
This application Jun. 27, 1977, Ser. No. 810,111
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **5 Claims**



1. A solar energy collection system comprising:

(a) an elongated, evacuated, substantially cylindrical envelope of transparent material having an orifice at one end thereof, said envelope having at least two walls, the space between said walls also being evacuated;

(b) an elongated, substantially cylindrical, sealed container mounted within said envelope, one end of said container projecting through said orifice via an air-tight seal, said container being disposed at an angle with respect to horizontal, said end projecting through said envelope being located at the higher elevation;

(c) a vaporizeable liquid located within said container and concentrated at the lower elevation thereof, said fluid, upon vaporization, progressing toward the higher elevation of said container where said vapor gives up heat and condensation takes place;

(d) a plurality of axially-aligned, fin-like structures attached to and projecting from said container for enhancing the heat absorption of said container;

(e) a reflector located below said container and extending for a substantial portion of the length of said container for receiving and reflecting incident solar radiation from an area wider than said container and for concentrating said radiation on said container;

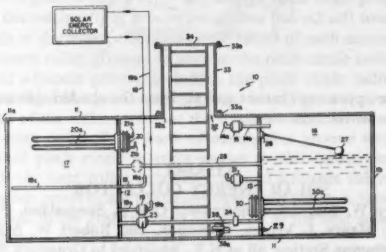
(f) a first substantially planar conductive member affixed to the emergent portion of said container for conducting therefrom heat given off by the condensation of said vaporized liquid;

(g) a second substantially planar conductive member removably fastened to said first conductive member for conducting heat therefrom; and

(h) a fluid-carrying conduit affixed to said second conduc-

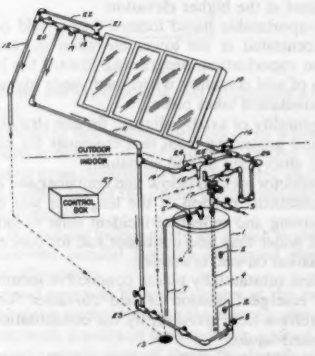
tive member for removing heat therefrom and transporting the extracted heat.

4,119,086
STORAGE TANK ASSEMBLY
Nathan E. Brussels, Cherry Hill, N.J., assignor to Solar Energy Systems, Inc., Burlington, N.J.
Filed Jul. 7, 1977, Ser. No. 813,636
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 **9 Claims**



1. Apparatus for storing liquid at different temperature levels comprising unitary hollow tank means;
first and second bulkheads arranged in spaced apart fashion within the interior of the tank means and being joined to the tank wall to form three water tight compartments including first and second end compartments separated by a central compartment;
first conduit means extending through said central compartment for coupling said first compartment to an external fluid heating source;
second conduit means extending through said central compartment for coupling an external heated liquid utilization device to said second compartment;
third conduit means extending through said central compartment for transferring liquid between said first and second compartments to regulate the temperature levels of the liquids in said end compartments.

4,119,087
SOLAR WATER HEATING SYSTEM
Robert E. Cook, Kankakee, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Jul. 26, 1976, Ser. No. 708,876
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—271 **3 Claims**



1. A solar water heating system with forced circulation of the water which comprises, a water storage tank, a solar heater, piping system connecting the tank to the solar heater for flow of water between the tank and solar heater, a cold water inlet provided in the system, an electrical circuit connected to the system with power lines connecting the circuit to a source of power, a pump connected to said piping and to the electrical circuit to circulate the water in the piping when actuated by the electrical circuit, temperature sensing means connected to the piping system and to the electrical ciruit to sense the temperature of the water in the storage tank and electrically actuate the pump for circulation of water through the system within a normal preselected temperature range between the water in the tank and the water in the solar heater, first electrically operated valve means connected in the circuit to the temperature sensing means and actuated by the latter to stop operation of the pump when the temperature of the water in the solar heater rises above a preselected temperature range between the water in the storage tank and solar heater, additional electrically operated valve means connected to the electrical circuit and thereby to the sensing means and the pump and actuated by the temperature sensing means when the water in the solar heater drops to a selected low temperature to thereby stop operation of the pump and open the system to drain and shut off flow of water to the solar heater to prevent damage to the system by freezing, and the temperature sensing means including a solar heater temperature sensor connected at the water discharge end of the solar heater to sense the temperature of the solar heated water, a tank temperature sensor connected to the tank to sense the temperature of the water stored in the tank, and the first electrically operated valve means being a temperature differential relay electrically connected by the electrical circuit to the solar heater temperature sensor and the tank temperature sensor to open and close the circuit in accordance with the preselected differential in temperature in the solar heater relative to the temperature in the tank to limit the circulation of water to the tank from the solar heater within a desired temperature range.

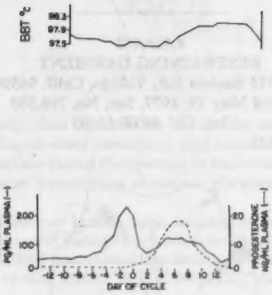
4,119,088
SOLDERING IRONS
Nigel L. Sim, Southampton, England, assignor to S. Mechele Limited, Southampton, England
Filed Aug. 13, 1975, Ser. No. 604,309
Claims priority, application United Kingdom, Aug. 14, 1974, 35807/74; Apr. 3, 1975, 13744/75
Int. Cl.[2] B23K 3/02
U.S. Cl. 126—413 **26 Claims**

1. A gas heated soldering iron comprising a soldering head, a combustion chamber in said head, perforate flame suppression means enclosing said chamber, jet means connectible to a source of pressurized gas, a passage interconnecting said jet means and said chamber, air inlet means for supplying air to said passage at a location remote from said chamber, and gas flow regulating means for supplying gas at an automatically regulated pressure from said source to said jet means.

4,119,089
METHOD OF PREDICTING AND DETERMINING OVULATION BY MONITORING THE CONCENTRATION OF VOLATILE SULFUR-CONTAINING COMPOUNDS PRESENT IN MOUTH AIR

George Preti, Philadelphia; George R. Huggins, Wallingford, both of Pa., and Joseph Tonzetich, Vancouver, Canada, assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Feb. 2, 1977, Ser. No. 764,750
Int. Cl.[2] A61B 10/00
U.S. Cl. 128—2 R 27 Claims



1. A method of diagnosing ovulation in female mammals comprising the steps of:

(a) monitoring the mouth air of one of said mammals during the fertility cycle for at least one volatile sulfur compound commonly occurring in said mouth air of said mammals; and

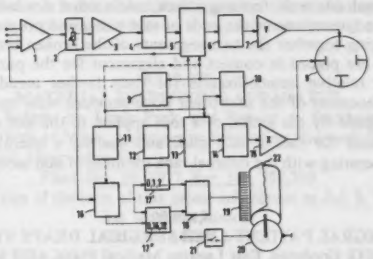
(b) providing an indicator means for qualitatively and quantitatively responding to variations in the concentration of said volatile sulfur compound in said mouth air; whereby said means for indicating said variations in concentration diagnoses ovulation in said female mammal.

4,119,090
ELECTROCARDIOSCOPE

Heinz Dehnert, Am Bahnhof, D-7801 Hugstetten-March, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,830
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1976, 2624581
Int. Cl.[2] A61B 5/04
U.S. Cl. 128—2.06 G 10 Claims

1. An electrocardioscope comprising an input amplifier for amplifying an analog ECG signal, a display tube, an output Y-amplifier having its output coupled to said display tube for determining the Y-deflection of said display tube, an output X-amplifier having its output coupled to said display tube for determining the X-deflection of said display tube, an analog to digital converter coupled to the output of said input amplifier, a memory coupled to the output of said converter, said memory having N-addresses and M-memory values per address, a digital to analog converter connected between the output of said memory and the input of said Y-amplifier, means for effecting address selection at the memory comprising an address generator with N-sites coupled to said memory, a further digital to analog converter having its output connected to the input of said output X-amplifier, an X-counter having its output connected to the input of said further digital to analog converter, means connected to said X-counter for selectively setting N- and N+n-count digits into said counter, and clock



means coupled to said address generator and to said X-counter for clocking said address generator and said counter.

4,119,091
TIE FOR USE IN BONE FRACTURE SURGERY

Anthony John Partridge, Sussex, Great Britain, assignor to Chichester Partridge Limited, Sussex, England

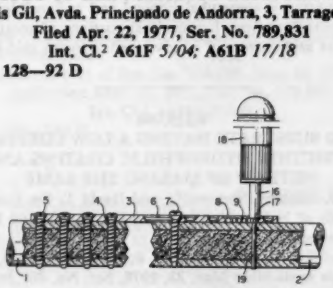
Filed Jun. 30, 1977, Ser. No. 811,530
Claims priority, application United Kingdom, Jul. 6, 1976, 27975/76
Int. Cl.[2] A61F 5/04; A61B 17/18
U.S. Cl. 128—92 B 13 Claims

1. A device for holding together the parts of a fractured bone, comprising an elongate, flexible, plastic strap provided on at least one face thereof with ratchet teeth and provided at one end thereof with an aperture through which the other end of the strap is capable of being passed and which has a pawl adapted to engage the said ratchet teeth, and means for spacing the strap from the bone.

4,119,092
METHODS OF REDUCTION OF BONE FRACTURES

José-Luis Gil, Avda. Principado de Andorra, 3, Tarragona, Spain

Filed Apr. 22, 1977, Ser. No. 789,831
Int. Cl.[2] A61F 5/04; A61B 17/18
U.S. Cl. 128—92 D 3 Claims



1. Improvements in methods of reduction of bone fractures, especially those which make use of a longitudinal plate of an oxidation resistant metal placed along the broken bone with its halves in contact with the ends of the segments thereof and with apertures for the insertion of screws into the proximal and distal cortical bone substance, comprising bringing together the two bone segments by first fastening one of the ends of the longitudinal plate to one of the segments then fastening the

central portion of the same plate to the other segment through a slot provided in the said central portion thereof, said plate being further provided with a second slot having teeth on its internal side wall, forming a rack, said second slot being situated adjacent one of the ends of said plate, and progressively bringing together the two segments of the broken bone until they are placed in contact and alignment for the purpose of their relative immobilization for their further mending, by displacement of the said other bone segment with respect to said plate by the action of a tool applied to the slot situated adjacent the end of said plate and bearing a lateral pinion cooperating with the internal rack toothing of said second slot.

4,119,093

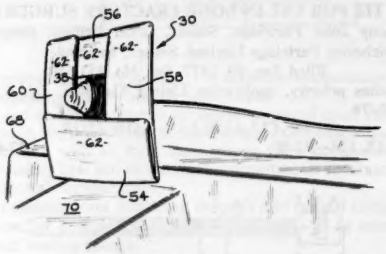
INTEGRAL PATIENT-LIMB SURGICAL DRAPE SYSTEM

Floyd G. Goodman, East Lansing Medical Plaza, 4528 S. Hagadorn Rd., East Lansing, Mich. 48823

Filed Sep. 24, 1976, Ser. No. 726,449

Int. Cl.[2] A61B *19/06*

U.S. Cl. 128—132 D **21 Claims**



1. A surgical drape for covering a surgery patient and isolating an extremity upon which surgery is to be performed, said drape comprising:

a generally rectangular sheet having a patient surface and an exterior surface;

a fenestration in said sheet for receiving said extremity and isolating said extremity relative to the rest of the patient's body;

an elongate limb covering mounted at its base to said sheet and over said fenestration for receiving said extremity;

said sheet being foldable about said covering so that substantially no exterior surface of said sheet is exposed; and

said covering is somewhat conical and collapsible so as to sequentially expose longitudinal portions of greater diameter as said extremity is advanced through said fenestration.

4,119,094

COATED SUBSTRATE HAVING A LOW COEFFICIENT OF FRICTION HYDROPHILIC COATING AND A METHOD OF MAKING THE SAME

Michael J. Micklus, Somerville, and David T. Ou-Yang, Raritan, both of N.J., assignors to Biosearch Medical Products Inc., Raritan, N.J.

Division of Ser. No. 822,412, Aug. 8, 1977, Pat. No. 4,100,309. This application Mar. 23, 1978, Ser. No. 889,249

Int. Cl.[2] A61F *5/42*; A61M *25/00*

U.S. Cl. 128—132 R **11 Claims**

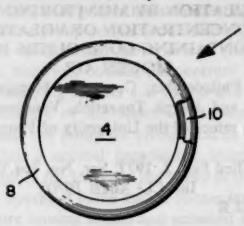
1. An article having a very low coefficient of friction when wetting with a water base liquid or a lower aliphatic alcohol comprising:

a substrate to which conventional polyurethanes adhere, and

a cured polyvinylpyrollidone-polyurethane interpolymer coating on said substrate.

8. A condom having a base material of polyurethane, and

a cured coating of a polyvinylpyrollidone-polyurethane interpolymer on the outside of said base material wherein said coated condom has a very low coefficient of friction



when wetted with a water base liquid or a lower aliphatic alcohol.

4,119,095

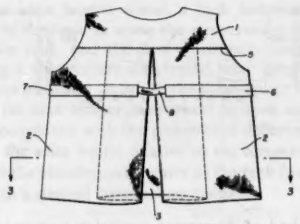
RESTRAINING GARMENT

Mattie Lewis, 111 Benicia Rd., Vallejo, Calif. 94590

Filed May 19, 1977, Ser. No. 798,565

Int. Cl.[2] A61F *13/00*

U.S. Cl. 128—134 **3 Claims**



1. A restraining garment comprising a front yoke including at least a portion of a head opening, arm openings and shoulder engaging portions, a front portion including an expandable element, said front portion and said expandable element being sewn to said yoke, two tunnel elements sewn to said front portion to traverse said front portion but not sewn to said expandable portion, said tunnel elements spaced from said shoulder engaging elements to encircle the chest cage of a patient wearing said garment, a back portion including closure means for said garment, and a belt passing through said tunnel elements.

4,119,096

MEDICAL INHALATION DEVICE FOR THE TREATMENT OF DISEASES OF THE RESPIRATORY TRACT

Wolf-Dietrich Drews, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 24, 1976, Ser. No. 717,343

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1975, 2537765

Int. Cl.[2] A61M *11/00*

U.S. Cl. 128—194 **2 Claims**

1. A hand-held inhalator comprising:

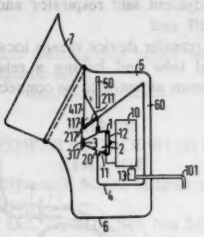
an outer housing including means defining an opening shaped to receive the anatomy of the nasal regions;

wall means defining an inner protective chamber within said outer housing;

an oscillator mounted within said inner chamber, said oscillator including an electronic excitation and a piezoceramic member electrically connected to and excitable into vibration by said electronic excitation circuit, electrical supply leads connected to said electronic excitation circuit and extending in fluid-sealed relation through said chamber

and outer housing for connection to an electrical supply, and switch means electrically connected in said electrical supply leads and operable to activate said electronic excitation circuit when said supply leads are connected to an electrical supply;

a conically-shaped sonic transducer extending through said wall means and mounted thereto in a liquid-tight relation at an oscillation node, said transducer carrying said piezoceramic member on its larger end, and including an



atomizing plate mounted on the smaller end of said conically-shaped sonic transducer, said atomizing plate including a surface facing the opening in said outer housing, said transducer transmitting ultrasonic vibrations to said plate; and

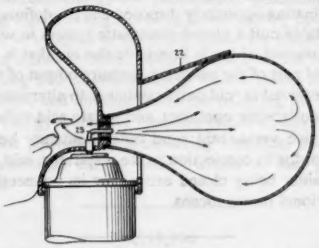
a liquid reservoir in said outer housing including an unobstructed outlet passageway means and wick means providing sole fluid communication from said outlet passageway means to said surface of said atomizing plate.

4,119,097

EMERGENCY OXYGEN SUPPLY

Donald Spector, Union City, N.J., assignor to Applied Research Commodities Industries, Inc., Hyattsville, Md.

Filed Feb. 3, 1977, Ser. No. 765,288
Int. Cl.[2] A61M *16/00*
U.S. Cl. 128—203 **4 Claims**



1. An emergency oxygen supply comprising:

A. a canister containing oxygen and provided with a normally-closed switch-actuated valve;

B. a mask and bellows sub-assembly constituted by a mask adapted to receive the mouth and nose of a user and to confine breathing to the interior of the mask and an inflatable bellows attached to the mask and communicating therewith;

C. means to feed oxygen from said canister into the bellows and coupled to the output of the valve, whereby when the switch is actuated, oxygen from the canister is fed into and inflates the bellows, to enrich the gas which the user inhales and exhales, and making it possible for the user to breathe the same volume of gas in the bellows until such time as the oxygen therein requires replenishment; and

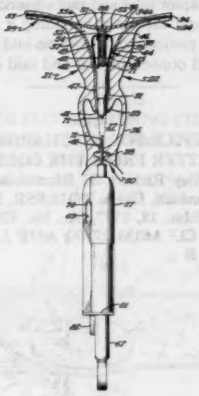
D. a dome-shaped cap fitting over the top of said canister, said mask being integral with a side wall of said cap and forming a part thereof whereby the bellows attached to the mask is normally confined within the interior of the cap, the side wall of the cap opposed to the mask being provided with a spring-biased trap door that, when the bellows is inflated, is forced open by the expanding bellows to permit the bellows to expand outside of said cap.

4,119,098

MATERIAL DISPENSING APPARATUS

Lee R. Bolduc, St. Louis Park, and Eugene A. Dickhudt, St. Paul, both of Minn., assignors to Population Research Incorporated, Clearwater, Fla.

Filed Jan. 10, 1977, Ser. No. 757,780
The portion of the term of this patent subsequent to Jul. 9, 1991, has been disclaimed.
Int. Cl.[2] A61M *1/00*
U.S. Cl. 128—235 **9 Claims**



1. Apparatus for dispensing and holding materials in the Fallopian tubes of a female comprising:

first means for dispensing materials into the uterine cavity;

second means for moving dispensed materials from the uterine cavity into the canals of the Fallopian tubes; and

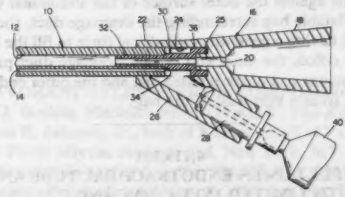
third means for effectively sealing the entrance to the canals of the Fallopian tubes for holding the dispensed materials within the canals.

4,119,099

CATHETER

Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation-in-part of Ser. No. 745,098, Nov. 26, 1976. This application Mar. 16, 1977, Ser. No. 778,051
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—349 R **9 Claims**



1. In a catheter having a shaft including a drainage lumen and an eye opening communicating therewith at its distal end, and an inflation lumen and a retention balloon communicating therewith,

a molded connector unit bonded to the outer surface of said

shaft adjacent the proximal end thereof, said connector unit including a drainage fitting having a bore communicating with said drainage lumen and having an inflation side arm,

the improvement comprising a rigid adapter tube having its forward end extending into and fitting snugly within said drainage lumen at the proximal end of said shaft underlying the forward end of said bonded connector unit, and having its rearward end seating in sealing engagement against said drainage fitting to seal said drainage lumen and the bore of said drainage fitting from said inflation said arm and inflation lumen, said adapter tube having a bore providing communication between the drainage lumen and the bore of said drainage fitting, and having means separate from both said bores providing in cooperation with said connector unit a means for communication between said inflation lumen and said inflation side arm, one of said adapter tube and said connector unit including a projection and the other including a mating recess for engaging said projection to position said adapter tube with respect to said connector unit and said drainage lumen.

4,119,100

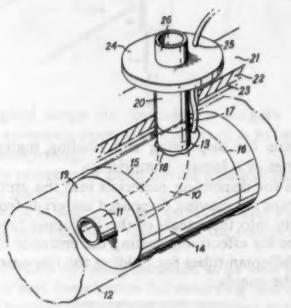
SURGICAL DEVICE FOR DISCHARGE OF FAECAL MATTER FROM THE COLON

John William Stanley Rickett, 33 Bronescombe Ave., Bishopsteignton, Teignmouth, Devon TQ14 9SR, England

Filed Mar. 18, 1977, Ser. No. 778,950

Int. Cl.[2] A61M *27/00*; A61F *5/44*

U.S. Cl. 128—350 R **6 Claims**



1. A surgical device for discharge of faecal matter from the colon when a part of the colon is to be temporarily defunctioned, the device comprising:

a bent drainage duct so dimensioned that its inner end can lie within the lumen of the colon while its outer end extends through the wall of the colon;

a flange disposed around the outer end of the drainage duct to lie against the outer surface of the abdominal wall; and

an inflatable bag surrounding the drainage duct, the inflated bag having a generally cylindrical form to fill the lumen of the colon, the inner end of said drainage duct projecting from one end of the inflated bag and the outer end projecting from a side wall of the bag.

4,119,101

MULTIPLE LUMEN ENDOTRACHEAL TUBE AND CUFF WITH LIMITED INFLATION AND PRESSURE

Victor Igich, 2022 44th Ave., Gulfport, Miss. 39501

Filed Mar. 1, 1976, Ser. No. 662,394

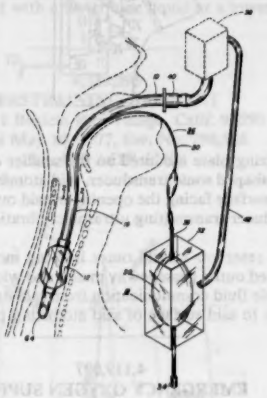
Int. Cl.[2] A61M *25/00*

U.S. Cl. 128—351 **3 Claims**

1. An endotracheal tube, with an inflatable cuff for pressure sealing and unsealing a trachea, mounted around said endotracheal tube for use with a respirator providing pulsating pressure output in artificial respiration, comprising:

(a) multiple lumen means, having oppositely disposed ends, running the length of said endotracheal tube which is adapted for one end of said oppositely disposed ends to connect with said respirator, and the other end of said oppositely disposed ends to be inserted in a trachea for aspirating lungs and an additional lumen means, having oppositely disposed free ends respectively terminating exteriorly adjacent said respirator and interiorly in said inflatable cuff; and

(b) a pressure transfer device means located outside of said endotracheal tube and having a relatively rigid outer container means adjusted to be connected to said respirator in parallel with said endotracheal tube for receiving a part of said pulsating pressure output of said respirator, and a collapsible container, that is deflatable and self-inflatable, mounted in said outer container means and connected to said additional lumen means by its exteriorly terminating oppositely disposed end for defining with said inflatable cuff a closed pneumatic system in which a limited amount of gas is injectable therein that is responsive to said part of the pulsating pressure output of the respirator received in said outer container to alternately collapse said collapsible container and inflate said inflatable cuff, and vice versa, said rigid outer container being closed except for its connection to the respirator, said collapsible container being closed except for its connection to said additional lumen means.



4,119,102

RADIO FREQUENCY TREATMENT OF TUMORS WHILE INDUCING HYPOTENSION

Harry H. LeVeen, 800 Poly Pl., Brooklyn, N.Y. 11209

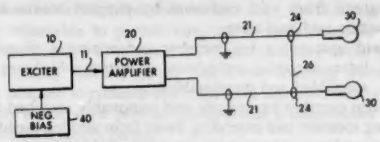
Division of Ser. No. 643,661, Dec. 23, 1975, Pat. No. 3,991,770, which is a continuation-in-part of Ser. No. 595,094, Jul. 11, 1975, abandoned, which is a continuation-in-part of Ser. No. 436,102, Jan. 24, 1974, abandoned. This application Nov. 11, 1976, Ser. No. 741,043

Int. Cl.[2] A61N *1/40*

U.S. Cl. 128—413 **4 Claims**

1. In the method of treating a naturally occurring tumor in a human by placing the portion of the body of the human in which the tumor is located in a radio frequency electromagnetic field thereby to heat the tumor tissue in said portion of said body by absorption of energy from said radio frequency electromagnetic field for a period of time and with intensity sufficient to cause necrosis of said tumor, but insufficient to

cause significant damage to the adjacent normal tissue in said field, the improvement which comprises inducing hypotension



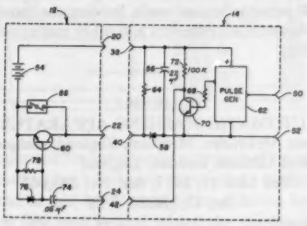
in said human while treating said tumor with said radio frequency electromagnetic field.

4,119,103

DETACHABLE POWER SOURCE WITH LOW CURRENT LEAKAGE

Thomas L. Jirak, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 27, 1976, Ser. No. 735,866
Int. Cl.² A61N *1/36*
U.S. Cl. 128—419 PS **20 Claims**



1. A body-implantable electromedical device of the type having electrical energy source means for developing electrical energy, generating means adapted to receive and responsive to electrical energy for periodically generating a tissue stimulating signal, said generating means having output means adapted to be coupled to electrode means for transmitting the stimulating signal to body tissue, coupling means for detachably coupling said electrical energy source means to said generating means, and limiting means for reducing the leakage of electrical energy from said coupling means comprising:

means for periodically transferring electrical energy from said electrical energy source means to said generating means.

4,119,104

TOBACCO SUBSTITUTE HAVING IMPROVED ASH CHARACTERISTICS

David S. Roth, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation of Ser. No. 631,094, Nov. 11, 1975, abandoned. This application May 17, 1977, Ser. No. 797,642
Int. Cl.² A24D *1/18;* A24B *3/14*
U.S. Cl. 131—2 **31 Claims**

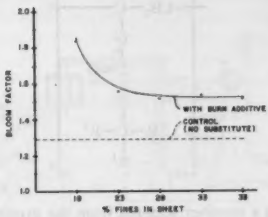
1. A tobacco substitute, which comprises:

(a) from about 10% to about 40% by weight of tobacco fines, the presence of said tobacco fines reducing ash blooming when said substitute is combusted;

(b) from about 5% to about 35% by weight of an organic binder;

(c) from about 2% to about 35% by weight of an ash stabilizing filler which is a boron compound selected from the group consisting of boric oxide, a boron oxyacid, and ammonium, alkali metal, and alkaline earth metal salts of a boron oxyacid and mixtures thereof; and

(d) from about 25% to about 75% by weight of an inorganic filler selected from the group consisting of alumina, alumina trihydrate, magnesium carbonate, calcium carbonate, charcoal and mixtures thereof.

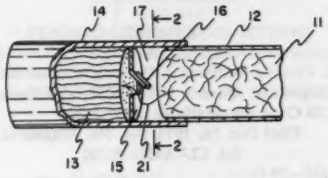


4,119,105

AIR FLOW LIMITING FILTER

William F. Owens, Jr., Pisgah Forest, N.C., assignor to Olin Corporation, Pisgah Forest, N.C.

Filed Jan. 31, 1977, Ser. No. 764,007
Int. Cl.² A24D *1/04*
U.S. Cl. 131—10.3 **5 Claims**



1. A filtering device for controlling the amount of smoke that can be drawn from a smoking article during each puff comprising a cylindrical tipping envelope forming a mouthpiece for mounting on one end of the smoking article, a valve mounted inside said tipping envelope biased in an opened position and providing when open the sole passage for smoke drawn through the tipping envelope from the smoking article, said valve comprising an air-impermeable baffle, an aperture in said baffle and a pressure responsive resilient flap at least as large as said aperture on the side of said baffle nearest to said one end of the smoking article which temporarily closes said aperture by bending towards the aperture whenever the pressure drop during any puff exceeds a predetermined level, and then opens by bending away from the aperture towards the end of the smoking article on which the tipping envelope is mounted after the puff is completed.

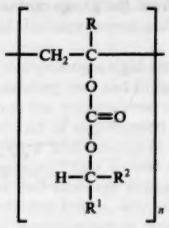
4,119,106

FLAVORANT-RELEASE RESIN COMPOSITIONS

Harvey J. Grubbs, Mechanicsville; Thomas V. Van Auken, and William R. Johnson, Jr., both of Richmond, all of Va., assignors to Philip Morris, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 624,900, Oct. 22, 1975, abandoned. This application Oct. 1, 1976, Ser. No. 728,729
Int. Cl.² A24B *3/12;* C08F *18/24;* C07C *69/96*
U.S. Cl. 131—17 R **12 Claims**

1. A polymeric composition having a molecular weight in the range between about 500 and 2,000,000 and consisting essentially of recurring monomer units corresponding to the formula:



wherein R is a member selected from the group consisting of aliphatic, alicyclic, heterocyclic and aromatic hydrocarbon radicals containing between 1 and about 10 carbon atoms; R^1 and R^2 are members independently selected from the group consisting of hydrogen and aliphatic, alicyclic, heterocyclic and aromatic hydrocarbon radicals, or R^1 and R^2 taken together with the connecting elements form an alicyclic structure, and wherein the total number of carbon atoms in R^1 and R^2 collectively does not exceed about 20; and n is an integer between 2 and about 10,000.

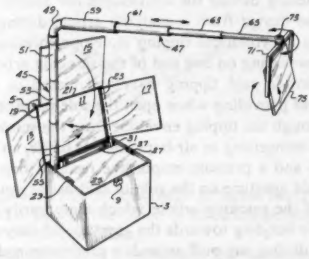
12. A smoking composition comprising an admixture of natural or reconstituted tobacco and between about 0.001 and 10 weight percent, based on the weight of tobacco, of a polymeric composition in accordance with claim 1 as an alcohol flavorant-release agent.

4,119,107

PORTABLE VANITY CASE

Joseph A. Pinzone; Anthony J. Pinzone, both of 404 Fairview Ave., Ridgewood, Queens, N.Y. 11237, and Stephen J. Gagliano, 35 Coral Ct., Malverne, N.Y. 11565

Filed Dec. 16, 1976, Ser. No. 751,069
Int. Cl.² A45D *40/00*
U.S. Cl. 132—79 G **1 Claim**



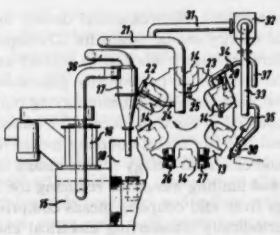
1. A portable vanity case comprising
an enclosure for receiving and storing toilet articles,
a lid mounted on said enclosure,
a first mirror mounted on the inside of said lid,
second, third and fourth mirrors connected by hinges to said first mirror to produce a composite structure which can be adjusted by hand to provide desired views of reflection,
a removable tray mounted horizontally within said enclosure,
a fifth mirror mounted on said tray and adjacent said first, second, third and fourth mirrors whereby a complete view from all angles of the facial features of the user may be obtained,
said fifth mirror having handles mounted thereon to serve the threefold function of a reflecting surface, a tray for cosmetic articles placed thereon, and a cover for the removable tray mounted within said enclosure,
a light source mounted within said enclosure and positioned between said first and said fifth mirrors to illuminate the facial features of the user,
an upstanding leg member removably held in position to extend from said enclosure by support means located within said enclosure,
said upstanding leg member comprising a plurality of interconnecting cylindrical segments which are easily assembled and disassembled,
an arm member having one end removably attached to said leg member and extending away from said leg member for pivotal movement about the vertical axis of said upstanding leg member,
said arm member comprising a plurality of telescoping hollow cylindrical segments which are adjustable to yield a desired overall arm length,
a bracket pivotally attached to the other end of said arm member, and
a sixth mirror pivotally attached to said bracket to make said mirror and said bracket independently adjustable to place said sixth mirror in any desired position,
said sixth mirror having reflecting surfaces on both front and back, one of which surfaces produces an enlarged image,
whereby the user is provided with a compact structure which enables illuminated viewing of the head and face from all possible angles while leaving the hands free for the application of cosmetics and other matters of personal grooming.

4,119,108

AUTOMATIC WASHING APPARATUS

Robert Osteen Alexander, Mitcham, England, assignor to Cera International Limited, London, England

Filed Oct. 17, 1977, Ser. No. 843,061
Int. Cl.² B08B *3/02*
U.S. Cl. 134—62 **10 Claims**



1. An industrial washing machine for washing production components, the machine comprising a housing; a washing section enclosed within the housing, the washing section including a source of washing fluid, at least one battery of jets which are mounted and located with precision at at least one washing station of the washing section and pressure fluid supply means for drawing washing fluid from said source and for feeding it under pressure to and through said at least one battery of jets; and supporting and locating means for supporting and locating each component in turn at each washing station so that each of the jets directs a pressure jet of washing fluid at a corresponding specific part of a component which is supported and located at that station by the supporting and locating means when the machine is in use; wherein the improvement comprises the provision of at least one manifold casing in which a plurality of said jets are mounted rigidly and in which a pressure fluid flow path is formed for directing to each of the jets mounted in the manifold casing washing fluid which is supplied under pressure by the pressure fluid supply means; there being locating means provided for providing precise location for each manifold casing at the respective washing station so that the jets mounted in that casing are located with precision at the respective washing station when the machine is

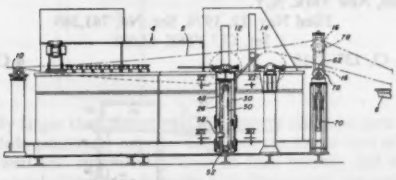
in use, the locating means for each manifold casing comprising a respective locator stop; and releasable latching means which are provided for retaining each manifold casing releasably in abutment with the respective locator stop, the latching means being releasable to permit removal of each manifold casing from the position at which it is located precisely at the respective washing station by the respective locating means and being adapted to reclamp the respective manifold casing subsequently in the same precise position that is determined by the respective locating means.

4,119,109

APPARATUS FOR TREATING STRIP

Frederick S. Lukac, New Kensington, and William P. Zbryski, Tarentum, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Feb. 17, 1977, Ser. No. 769,497
Int. Cl.[2] B08B *3/04*
U.S. Cl. 134—64 R **11 Claims**



1. In apparatus for continuously treating alloy strip including a heat treating line, a first tank containing a molten salt bath at the exit end of said heat treating line, a driven horizontal sink roll in said first tank around which the strip passes, a second tank containing a liquid rinse at the exit end of said first tank, and a third tank containing pickling liquor at the exit end of said second tank; the improvement comprising means for raising and lowering said sink roll and its drive between positions below and above said salt bath, said means for raising and lowering said sink roll including a first vertically movable support on one side of said first tank for supporting one end of said roll and the sink roll drive, a second vertically movable support on the other side of said first tank for supporting the other end of said roll, a fixed support adjacent each of said movable supports, means on each of said fixed supports for raising its associated movable support, and upper sprocket secured to each fixed support with its axis horizontal, a lower sprocket secured to each fixed support with its axis horizontal, a shaft connecting said lower sprockets, a chain connecting each upper and lower sprocket, and means connecting each of said chains to its associated movable support whereby said sink roll is maintained horizontal during its movement.

4,119,110

FLUID PURGING SYSTEM

Kirby Lee Stone, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

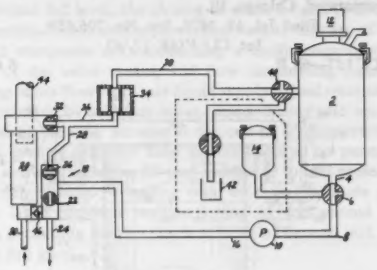
Filed Jun. 29, 1977, Ser. No. 811,086
Int. Cl.[2] B29F *1/00*
U.S. Cl. 137—15 **2 Claims**

1. A method of flushing a portion of a liquid reaction molding system containing a process liquid with particulate suspensions, which comprises:

(a) discontinuing flow of a particulate suspension liquid into a portion of the liquid reaction molding system from a particulate fluid source;

(b) flushing the particulate suspension liquid with a similar unparticulated liquid prior to system shutdown;

(c) reconvening the flow of particulate suspension liquid and flushing the similar unparticulated liquid with particulate suspension liquid prior to system start-up;



(d) mixing the flushed unparticulated fluid with process fluid from the particulate fluid source; and

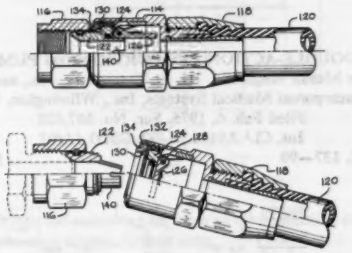
(e) adjusting the particulate content of the fluid source.

4,119,111

FRANGIBLE HOSE END FITTING

Alan R. Allread, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Jun. 28, 1976, Ser. No. 700,095
Int. Cl.[2] F16K *17/40*
U.S. Cl. 137—68 R **6 Claims**

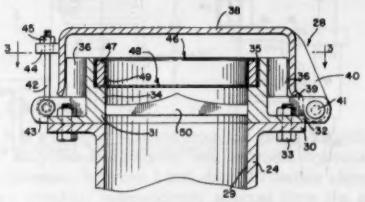


1. A frangible hose end fitting comprising, in combination, a fitting body having an axis, and a coaxial passage defined therethrough, said body being defined by an interconnected hose attachment portion and a fitting connection portion, hose attachment means defined on said hose attachment portion, fitting connection means defined on said fitting connection portion, a valve within said body mounted upon one of said portions movable between open and closed positions, an annular radially extending flange defined upon one of said portions and having an outer periphery affixed to the other portion, said flange fracturing under predetermined tension or bending forces being imposed upon said portions permitting separation of said portions, an annular ring mounted upon said body engaging said body axially spaced from said flange and engaging said flange adjacent its outer periphery to brace said flange against bending fracture, and valve positioning means mounted on the other portion comprising a tubular sleeve concentric with said passage holding said valve in said open position and out of alignment with said passage and releasing said valve to the closed position upon fracturing of said flange.

4,119,112
PRESSURE RELIEF VALVE

Franklin P. Adler, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jul. 19, 1976, Ser. No. 706,650
Int. Cl.[2] F16K *17/40*
U.S. Cl. 137—68 R 5 Claims



1. A safety vent for a covered hopper car having a hopper and a pneumatic discharge mechanism adapted to be connected to a fluid pressure system for material unloading, comprising;

a tubular member having a tubular wall, one portion thereof connected to and communicating with the interior of said hopper car,

said tubular wall having a second portion communicating with the atmosphere,

a seating surface on one of said portions,

a valve member solely seated upon said surface and rupturable at a predetermined design pressure outside the car,

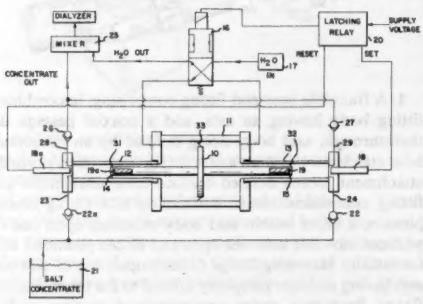
said member adapted to seat fluid tight against said surface solely by reduction of pressure in the car, and

said valve member including a stretchable diaphragm stretched transversely across said tubular wall in tensioned condition whereupon rupture of the same, said diaphragm is substantially destroyed to permit flow of fluid through said tubular member.

4,119,113
DOUBLE-ACTION PROPORTIONING PUMP

Stephen Mason Meginniss, III, St. Petersburg, Fla., assignor to Extracorporeal Medical Systems, Inc., Wilmington, Del.

Filed Feb. 6, 1975, Ser. No. 547,625
Int. Cl.[2] A61M *16/00*; G05D *11/02*
U.S. Cl. 137—99 5 Claims



1. A fluid pressure driven pump comprising:

a double-acting piston means including a center cylinder, and a pair of end cylinders disposed on either side of said center cylinder, a center piston and end pistons each operated by said center piston, said end cylinders being extensions of said center cylinder with no exposed moving parts between said cylinders,

switch means operated by said piston means,

solenoid operated valve means alternately connecting opposite chambers of said center cylinder with a source of first fluid under pressure and an outlet of said valve means,

valve means alternately connecting said end cylinders to a source of second fluid and to an outlet of said valve means, said switch means being connected to operate said solenoid operated valve means between alternate states as said piston means reciprocates within said cylinder,

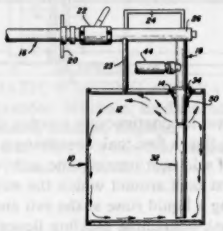
seals around the periphery of each end piston, said seals engaging said end cylinders to provide the only separation between said first fluid in said center cylinder and said second fluid in said end cylinders, and

a cup seal around the periphery of said center cylinder, said cup seal being formed from a circular piece of compliant, durable rubber-like material which is deformed so that the outer periphery thereof bears against the inner surface of said center cylinder.

4,119,114
FLUID TRANSFER APPARATUS

Jack Curtis Bolton, Salinas, and Franklin Leroy Alexander, Hollister, both of Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 12, 1976, Ser. No. 741,389
Int. Cl.[2] F16K *43/00*
U.S. Cl. 137—318 4 Claims



1. Apparatus for transferring toxic fluid material from a container having closure means toward another closed location comprising conduit means and a communicating probe member having: an outer hollow sleeve member terminating at the non-communicating end thereof in rotary cutting means; closure puncturing and spring ejection means secured within said probe member near said end thereof; said closure, puncturing and spring ejection means are relatively positioned to effect puncturing of said closure means and to force compression of said spring and wash water spray port means positioned around the exterior of said probe member above said cutting, puncturing and spring ejection means to wash the interior of said container.

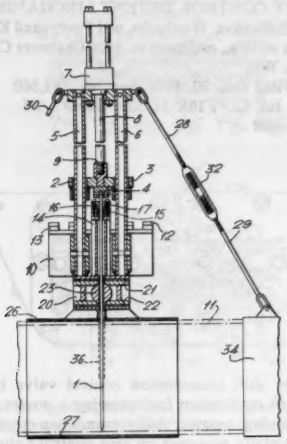
4,119,115
STOPPING FLUID FLOW IN PIPES

Alec Reginald Carruthers, Newcastle, England, assignor to British Gas Corporation, London, England

Filed Mar. 21, 1977, Ser. No. 779,488
Claims priority, application United Kingdom, Mar. 19, 1976, 11094/76
Int. Cl.[2] F16K *43/00*
U.S. Cl. 137—318 5 Claims

1. An apparatus for cutting into and stopping the flow of fluid in a plastic pipe comprising a clamp located around the pipe in a fluid tight manner, a valve mounted onto the clamp, a support member removably mounted upon the valve and having guide rails, a carriage adapted to move along said guide rails, a cutting blade having a semicircular cutting edge attached to and movable with the carriage, actuating means for moving the carriage and blade along the rails, a sealing member mounted between the carriage and the valve and adapted so that the blade, in use, passes therethrough, and clamping

means for securely clamping the apparatus onto the pipe, said blade being movable through the sealing member and the valve and through the upper part of the pipe wall into the interior of the pipe the diameter of said cutting edge of said blade being



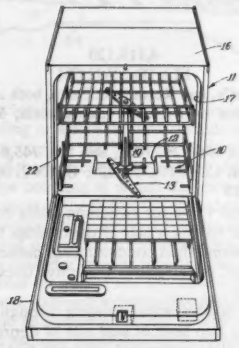
slightly larger than the internal diameter of said pipe such that the blade penetrates only partially into the lower part of the pipe wall and cuts off any flow of fluid therein, and upon withdrawal of the blade from the pipe, flow is restored without loss of gas to the atmosphere.

4,119,116

RECEPTACLE FILL APPARATUS

Philip P. Johnson, and William T. Lampman, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 6, 1976, Ser. No. 683,952
Int. Cl.² F16K *21/18*
U.S. Cl. 137—387 **10 Claims**



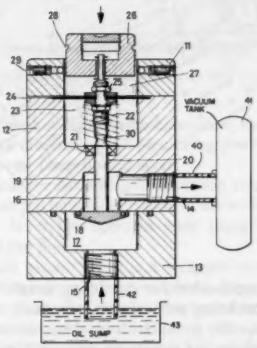
1. In an apparatus having a liquid holder receptacle, improved means for controlling the filling of the liquid receptacle from a pressurized liquid supply, comprising: a control valve defining a liquid flow passage having an upstream portion and downstream portion; means for connecting said upstream portion to a pressurized liquid supply; means for delivering liquid from said downstream portion into the receptacle, said control valve including first movable valve means for selectively closing said upstream portion for controlling liquid delivery to said downstream portion of said flow passage to said receptacle, and second movable valve means operable for selectively closing said downstream portion means for operatively said second valve means at all times independently of said first valve means for closing said downstream of the valve as an incident of the liquid level in said receptacle reaching a preselected full level, the closing of either of said portions by its associated valve means preventing further delivery of liquid to said receptacle notwithstanding a malfunctioning of the other of the valve means; and flow terminating means for causing liquid flow from said liquid supply to said receptacle to be terminated by said first valve means closing said upstream portion of the flow passage at the end of a preselected time period greater than the time period required to permit the liquid delivery means to fill said receptacle to said preselected full level, thereby permitting only up to a maximum preselected level despite a malfunctioning of said second valve means permitting the receptacle to be filled beyond said preselected full level.

4,119,117

VALVE MEANS OF A DEVICE FOR REMOVING LUBRICATING OIL

Dieter Winkelvoss, Einbeck, Fed. Rep. of Germany, assignor to Dresser Europe S.A. "LeSouverain" Boulevard du Souverain, Brussels, Belgium

Filed Mar. 24, 1977, Ser. No. 780,879
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615464
Int. Cl.² F16K *17/00*
U.S. Cl. 137—456 **14 Claims**



8. A device for removing oil from an oil containing chamber of a combustion engine, comprising:

a vacuum tank having a chamber which may be at least partially evacuated to establish a subatmospheric pressure condition therein;

a suction hose having two ends, one of which serves as a nozzle for insertion into the oil-containing chamber of the engine; and

a valve having a valve housing having interior walls which define therein a valve seat, an inlet chamber disposed on one side of said valve seat which is capable of communication with the other end of the suction hose, an outlet channel disposed on the other side of said valve seat which is capable of communication with the chamber of the vacuum tank and a control chamber which is communicative with said outlet channel and which has an opening which opens onto the exterior surface of said valve housing, a valve locking member having an upstanding valve stem coupled thereto which is mounted in said valve housing for reciprocal movement between an open and closed position relative to said valve seat, sealing means which cooperate with said valve stem when said locking member is in said closed position thereof, for sealing off said control chamber from communication with said out-

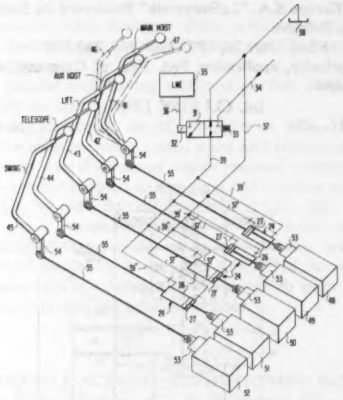
let channel, and a flexible diaphragm which is secured to said valve stem and is disposed within said control chamber with its marginal edges sealingly secured to the walls defining said control chamber so as to seal at least a portion of said chamber from the outside atmosphere, said diaphragm being at least partially responsive to a change in the pressure differential established on opposite sides thereof for moving said locking member to said closed position thereof following the completion of drawing oil from the oil-containing chamber and into the vacuum tank as a result of the subatmospheric pressure condition established therein.

4,119,118

AUTOMATIC MACHINE MOTION RESTRICTING MECHANISM

Ramesh P. Patel, Hagerstown, Md., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Jan. 13, 1977, Ser. No. 759,240
Int. Cl.[2] F16K *31/44*
U.S. Cl. 137—594 **12 Claims**



1. In a mechanism for restricting unsafe machine motions without restricting safe machine motions, a manual control element movable to initiate a machine motion, a machine motion control device associated with said manual control element, a fluid link connected between said manual control element and said control device, and means including a pressurized fluid supply device connected with said fluid link for delivering pressurized fluid to and for receiving pressurized fluid from said fluid link and operable to render the link "hard" in both directions of movement of said manual control element, or "soft" in at least one direction of movement of said manual control element selectively, and a safe and unsafe machine motion sensing apparatus coupled with said pressurized fluid supply device and normally conditioning the supply device to deliver pressurized fluid to said fluid link to render the link "hard", said sensing apparatus adapted to condition the supply device to interrupt the delivery of pressurized fluid to the fluid link, whereby the link is rendered "soft" in at least one direction of movement of the manual control element when the sensing apparatus senses an unsafe machine motion.

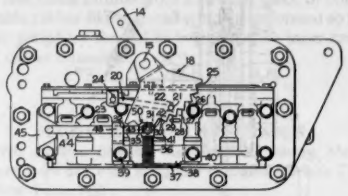
6. In a mechanism as defined in claim **1** which comprises a complete machine motion control system, additional manual control elements and machine motion control devices in coacting pairs to control a plurality of machine motions, additional fluid links connected between the manual control elements and control devices of said pairs, and said means being common to all of the fluid links in said system and being connected to each fluid link and including a device to selectively deliver pressurized fluid to the fluid links or interrupt the delivery of said fluid responsive to the activity of a safe and unsafe machine motion sensing means.

4,119,119

SHIFT CONTROL DETENT MECHANISM

Gerardus M. Ballendux, Waukesha, and Ferdynand Kolacz, New Berlin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 20, 1976, Ser. No. 752,560
Int. Cl.[2] F16K *31/524;* G05G *5/24*
U.S. Cl. 137—868 **10 Claims**



1. A power shift transmission control valve including a detent and shift mechanism for operating a power shift transmission comprising, a power shift transmission control valve, a shift lever pivotally mounted on said control valve, a detent segment integrally connected to said shift lever, a plurality of flow control valves reciprocally mounted in said control valve each biased to a return position, a control rack slidably mounted in said transmission control valve and defining a cammed surface of a predetermined number of valve operating positions for selectively operating said plurality of flow control valves, said detent segment defining said predetermined number of cam slots along a cam surface correlated with said valve positions, link means pivotally connecting said detent segment to said control rack for correlating said control rack with said detent segment, a detent follower selectively engaging said cam slots as said detent segment is operated by said shift lever, resilient means biasing said follower in an engaging position with said detent segment to retain said detent and shift mechanism in selective and alternative positions of said power shift transmission control valve.

4,119,120

FLUID SWITCH

Gordon E. Mehaffy, and Kenneth B. Sawa, both of Yorba Linda, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 29, 1976, Ser. No. 745,885
Int. Cl.[2] F16K *31/126;* G01N *1/00*
U.S. Cl. 137—885 **3 Claims**

1. An improved valve for switching fluids comprising:

(a) a first plate having a pair of depressions therein;

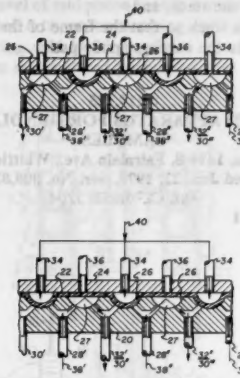
(b) first and second fluid conduit means passing through said first plate and opening into respective ones of said pair of depressions;

(c) third fluid conduit means passing through said first plate and opening into both of said pair of depressions;

(d) a second plate assembled adjacent said first plate and having first control fluid inlet means passing through said second plate and opening opposite one of said depressions and second control fluid inlet means passing through said second plate and opening opposite the other of said depressions, each of said control fluid inlet means being connectable to a source of control fluid under pressure;

(e) an elastomeric diaphragm disposed between said first plate and said second plate when said plates are assembled adjacent one another, said diaphragm being deformed into one of said depressions to seal said fluid conduit means opening therein when control fluid under pressure is connected to said first control fluid inlet means and being

deformed into the other of said depressions to seal said fluid conduit means opening therein when control fluid under pressure is connected to said second control fluid inlet means; and,



(f) means for holding said first plate, said second plate and said diaphragm in assembled adjacent relationship.

4,119,121

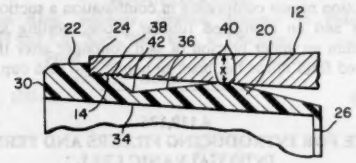
PROTECTIVE CLOSURE FOR INTERNAL PIPE THREADS

Kenneth A. Smiley, Eldred, Pa., assignor to Pennsylvania Plastic Products, Inc., Eldred, Pa.

Continuation of Ser. No. 694,535, Jun. 10, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,333

Int. Cl.[2] B65D *59/06*

U.S. Cl. 138—96 T **8 Claims**



7. A plastic closure for protecting first internal threads of a first pipe coupling in which the first threads extend to the end of the first pipe coupling and have one diameter at one distance from the end of the first coupling, and second internal threads of a second pipe coupling in which the second threads terminate at a point short of the end of the second pipe coupling, and the coupling section from said point to the end of the second coupling is flared outwardly to form a recess, and the second threads have a diameter smaller than the one diameter at said one distance from the end of the second coupling comprising:

a hollow sleeve having a substantially radially inflexible end portion and an opposite radially flexible end portion;

a rim at said radially inflexible end portion of said sleeve;

first outer peripheral helical thread means on said radially inflexible end portion of said sleeve adjacent said rim for (1) threadingly engaging the first internal threads for providing a first primary means for securing the closure to the first pipe coupling, and (2) for nesting within the recess for providing a second secondary means, if any, for securing the closure to the second pipe coupling; and

second outer peripheral thread means on said radially flexible end portion of said sleeve separate and axially spaced from said first thread means, said second thread means adapted (1) to frictionally threadedly engage said first internal threads of the first pipe coupling for providing a first secondary means for securing the closure to the first pipe coupling, and (2) to be flexed radially inwardly by the second internal threads of the second pipe coupling and to frictionally threadedly engage said second internal threads to provide a second primary means for securing the closure to the second pipe coupling.

4,119,122

PIPE WITH AN OUTER FOAM PLASTIC COVERING

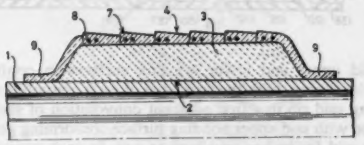
Warner Jan de Putter, Hardenberg, Netherlands, assignor to Wavin B.V., Netherlands

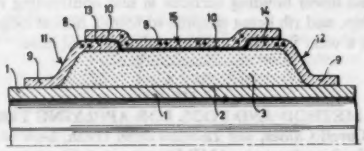
Filed Jun. 16, 1976, Ser. No. 696,629

Claims priority, application Netherlands, Jun. 19, 1975, 7507351

Int. Cl.[2] F16L *57/00*

U.S. Cl. 138—103 **19 Claims**





1. A pipe; the pipe having a length dimension; along at least a part of its length dimension, the pipe being provided on its outside with an outer foam plastic layer;

the foam plastic layer has a length dimension along the pipe that is less than the length dimension of the entire pipe; the foam plastic layer has opposite ends along the length dimension of the pipe;

outside the foam plastic layer, is a wrapped surface layer comprised of windings of thermoplastic tape, the windings are placed so that neighboring windings partially overlap at overlapping parts thereof, the overlapping parts of neighboring windings are heat sealed to each other;

the surface layer has a length dimension along the pipe that is greater than the length dimension of the foam plastic layer along the pipe and the surface layer extends beyond both opposite ends of the foam plastic layer and for a length along the surface of the pipe;

at least one threadlike reinforcing member is embedded in each overlapping part of the thermoplastic tape material and is situated at the surfaces at which the overlapping parts contact and is wound around the pipe.

4,119,123

FLEXIBLE HOSE WITH WEAR INDICATOR

Ernest K. Samuels, Brooklyn, N.Y., assignor to Ernie Samuels, Inc., Brooklyn, N.Y.

Filed Dec. 23, 1976, Ser. No. 754,076

Int. Cl.[2] F16L *11/04, 11/06, 11/10*

U.S. Cl. 138—122 **22 Claims**

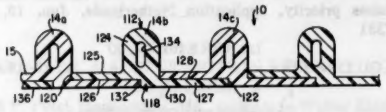
1. An elemental band for use in constructing a flexible hose comprising:

a strip of flexible material having first and second marginal edges defining the width of said strip;

at least one rib secured on top of said strip to protrude thereabove and to extend therealong between and in spaced relationship from said edges;

a lower bonding surface extending along the underside of said strip, at least a portion of said lower bonding surface extending under the area between said rib and said first edge; and

an upper bonding surface extending along the top of said strip between said rib and said second edge, said upper bonding surface lying substantially in a common plane with said lower bonding surface and said second edge being further from said rib than said first edge, said strip being formable into overlapping helical confolutions with



said upper and lower bonding surfaces in confronting relationship, with the first edge of each convolution abutting said rib in a first adjacent convolution of said band, and with said upper bonding surface conforming generally to said lower bonding surface and, in each convolution, extending under said rib in a second adjacent convolution of said band;

said strip being formable into a hose by bonding said upper and lower bonding surfaces in said confronting relationship, said rib being adapted to form a helical ridge useful as a wear indicator on the surface of said hose.

4,119,124

METHOD AND TOOL FOR APPLYING TIES

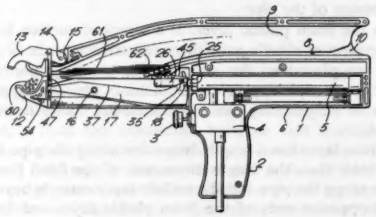
John Covell Collier, and Leonard John Owen, both of Exeter, England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 4, 1977, Ser. No. 793,661

Claims priority, application United Kingdom, May 25, 1976, 21519/76

Int. Cl.² B21F *9/02*

U.S. Cl. 140—93.2 **30 Claims**



1. A method of applying a bundle tie having a flexible strap extending from an apertured frame for the passage of the strap looped back on itself with a tool having a tie storage area, a movable carriage reciprocably positioned in a guide path and a releasable loop guide defining an internal circular path, the steps comprising:

a. arranging a plurality of ties in a stack with the straps in generally parallel overlapping relationship;

b. positioning the stack in the tie storage area adjacent the carriage guide path with the straps extending forwardly and with the frame of the lowermost tie projecting into the guide path;

c. driving the carriage forwards to engage and drive the lower most tie forwardly lengthwise to loop the strap about a bundle of wires which may be positioned within the releasable loop guide, the strap following the internal circular path so as to feed the free tip thereof back through the aperture in the frame and into the carriage;

d. gripping the tip of the strap in the carriage;

e. moving the carriage rearwardly to tighten the loop about the bundle of wires;

f. shearing the strap adjacent the frame;

g. withdrawing the carriage behind the frame of the lowermost tie in the stack; and

h. moving the stack so that the frame of the lowermost tie projects into the carriage guide path.

4,119,125

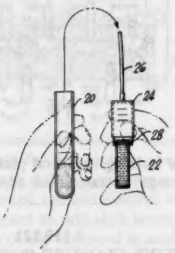
METHOD AND APPARATUS FOR HANDLING LIQUID SAMPLES

Carlos D. Elkins, 1414 S. Fairplain Ave., Whittier, Calif. 90601

Filed Jun. 22, 1977, Ser. No. 808,820

Int. Cl.² B65B *3/04*

U.S. Cl. 141—11 **12 Claims**



8. A method for handling a phase separable liquid sample, the method comprising the steps of:

introducing a phase separable liquid sample into a container, processing the sample to obtain substantial separation of at least one fluid phase of said sample, siphoning the separated fluid phase into a cup by utilizing suction means to extract the separated fluid phase from said container, said suction means comprising in combination a suction cylinder and an elongated tubular probe, nesting said cup within an upper portion of said container after the separated fluid phase has been siphoned into said cup.

4,119,126

DEVICE FOR INTRODUCING FILLERS AND TERMINAL INTO GALVANIC CELL

Faat Khatovich Nabiullin, 3 Mytischinskaya ulitsa, 14a, kv. 90; Efim Mikhailovich Gertsik, Malo-Moskovskaya ulitsa, 3, kv. 92; Jury Timofeevich Rodionov, prospekt Mira, 190-A, kv. 71, and Vyacheslav Anatolievich Rabinovich, prospekt Mira, 122, kv. 270, all of Moskow, U.S.S.R.

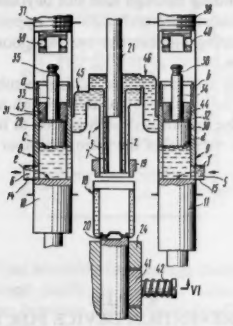
Filed Apr. 23, 1976, Ser. No. 679,792

Int. Cl.² B65B *3/32*

U.S. Cl. 141—100 **1 Claim**

1. A device for introducing fillers and a terminal into the case of a galvanic cell comprising a tool in the form of a nozzle with a central channel, said nozzle having interior partitions which define at least one interior space, each of said interior spaces being concentric with said central channel; a mechanism for volumetric supply of different fillers into said interior spaces of the nozzle incorporating cylinders, each cylinder including a piston with a rod and a stop to limit the travel of the rods, a space of each of said cylinders communicating through a first hole of said cylinder with a respective pressure line feeding a respective filler and through a second hole of said cylinder with a respective interior space of the nozzle, said piston of each of said cylinders having a bushing to vacate the space of said cylinder for said respective filler, a distance between said first and second holes of said cylinder, which place the space of each of said cylinders in communication with said respective pressure line and with said respective space of said nozzle, being larger than the height of a metered portion of a respective filler in said space said bushing of the

piston in each of said cylinders being located inside of said rod and moveable relative to said rod to form said metered portion by the flow of a respective filler from said first hole into said space and having an extension with a recess, said stop for limiting the travel of said piston having a means for adjustment and having a ball retainer for receiving and holding said extension and moving said bushing relative to said rod and said piston to force said metered portion of filler from said space



through said second hole into a respective interior space of said nozzle; said piston and said rod being moveable together to open and close communication of said space with said first and said second holes and a mechanism, for creating counterpressure to resist an outflow of the fillers, operatively connected to said nozzle and comprising a pusher in the form of a rod supporting the galvanic cell to be filled pressed against a support by a spring-loaded block.

4,119,127
SHOULDER BAG

Gottfried Klug, Bobigny, France, assignor to Pelzer-Kirst GmbH and Co., Kirn, Fed. Rep. of Germany

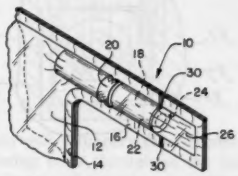
Filed Aug. 9, 1977, Ser. No. 823,128
Int. Cl.[2] B65D *33/06, 33/16*
U.S. Cl. 150—3 **8 Claims**

1. A bag comprising:
(a) a hollow receptacle including a front wall, a rear wall, and two side walls interconnecting said front and rear walls;
(b) an elongated carrier strap including two end portions connected to said side walls respectively,
(1) said walls and said end portions consisting essentially of pliable material,
(2) said receptacle and said strap defining a passage open transverse to said front and rear walls, and jointly extending in a closed loop about said passage,
(3) at least one of said end portions being tubular, and the hollow interior of said at least one end portion communicating with said receptacle,
(4) said receptacle being formed with an opening toward said passage, and
(5) said one portion being formed with an elongated aperture directed away from said passage to receive an elongated portion of an article carried by said receptacle.

4,119,128
TAMPERPROOF STERILE PORT COVER AND METHOD OF MAKING SAME

Marilyn Bishop, 1 N 341 Indian Knoll Rd., West Chicago, Ill. 60185

Filed Feb. 18, 1977, Ser. No. 770,237
Int. Cl.[2] B65D *31/02*
U.S. Cl. 150—8 **13 Claims**

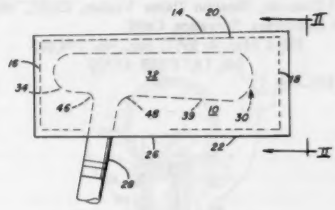


8. A sterile port cover comprising:
a closed end sleeve with a generally transversely extending fracture line along which said sleeve is adapted to be severed, said sleeve being formed from two plastic sheets seamed together along the longitudinal edges of said sleeve, said sleeve having a thickness at said fracture line which is at least as great as the thickness of one of said sheets elsewhere in the sleeve,
and a rigid port tube sealably secured within said sleeve, said fracture line positioned substantially between the exterior end of said port tube and the part of said port tube which is secured to said sleeve,
said sleeve having notches at said sleeve seams aligned with said exterior end of said port tube, so that said fracture line generally follows said exterior end of said port tube.

4,119,129
PUTTER COVER

James M. Freiberg, 221 Glenview Rd., New Kensington, Pa. 15068

Filed Sep. 19, 1977, Ser. No. 834,439
Int. Cl.[2] A63B *57/00*
U.S. Cl. 150—52 G **6 Claims**



1. In the combination including a putter and a cover therefor, the improvement wherein said cover is comprised of:
a pair of sides formed of a flexible non-elastic material of at least the same length as the main striking face of the putter head;
said sides being joined at their top edges and partially joined along their bottom edges; an opening formed along the bottom edge of said cover defined by the endpoints of said partial joinder, said opening being greater than the dis-

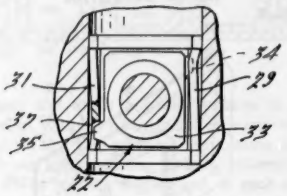
tance from the heel end of the putter head to the toe edge of the putter hosel and said opening being smaller than the distance from the toe end to the heel edge of the putter hosel.

4,119,130

BARREL NUT AND METHOD OF MANUFACTURE

Imre Berecz, Dana Point, Calif., assignor to Microdot Inc., Greenwich, Conn.

Filed Feb. 25, 1977, Ser. No. 772,128
Int. Cl.² F16B *39/00*
U.S. Cl. 151—41.76 **1 Claim**



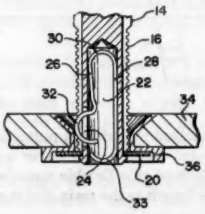
1. A barrel nut comprising a barrel element and a nut element, said barrel element comprising an elongated member semi-cylindrical in transverse cross section and having a convex side and a concave recessed side, the recessed side being of a rectangular configuration and having a flat bottom with integral longitudinal side walls and transverse imperforate end walls, a bolt receiving hole extending from the convex surface of said barrel element to said recess bottom, said nut element having a rectangular portion disposed in said recess, a pair of ears extending from opposite side edges of the rectangular portion of said nut element, apertures in the side walls of said barrel element for receiving the ears on said nut element, said apertures being larger than said ears to provide for rotational movement of said ears, said side walls being deflected radially inwardly so as to overlie said ears, said ears being diametrically opposite each other and the average distance from said end walls of said recess to said rectangular portion being no greater than the average distance from the side walls to the rectangular portion and less than the distance of rotational movement permitted said ears in said apertures whereby said ends walls preclude relative rotation between said barrel element and said nut element.

4,119,131

FASTENER WITH WIRE-FORM HOLDOUT

Frank J. Cosenza, Rancho Palos Verdes, Calif., assignor to Tridair Industries, Torrance, Calif.

Filed Mar. 4, 1977, Ser. No. 774,405
Int. Cl.² F16B *43/00*
U.S. Cl. 151—69 **6 Claims**



1. An aircraft panel fastener with a wire-form holdout comprising:

(a) a stud-like fastener body,

(b) said body having a central bore extending inwardly from its forward end,

(c) a longitudinal slot on said fastener body communicating with said bore,

(d) a generally U-shaped wire spring member having two legs with one leg extending outwardly and then inwardly forming a curved, protruding bearing surface thereon,

(e) said spring member housed in said bore with the bearing surface extending through said slot beyond the periphery of said fastener body and with the opposite leg of said member bearing against the opposite bore wall of the fastener bore,

(f) said bearing surface of said spring member biased outwardly but deflectable inwardly through said slot, and

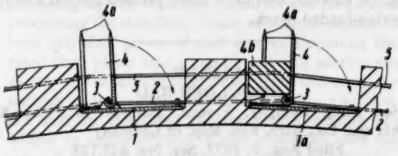
(g) said opposite leg formed with a hook at its lower end to facilitate the removal of the spring member from the bore.

4,119,132

SKID PREVENTION DEVICE FOR TIRES

Gottfried Ries, Freiburger Str. 19, 7517 Waldbronn-Reichenbach, Fed. Rep. of Germany

Filed Mar. 14, 1977, Ser. No. 777,498
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1976, 2610346
Int. Cl.² B60C *11/00*
U.S. Cl. 152—208 **17 Claims**



1. A skid prevention device for tires, which tires are provided with longitudinally-and radially-extending rows of treads separated by discrete laterally-extending rows of recesses, comprising:

a plurality of elongated generally U-shaped metal claws disposed within the rows of the recesses of the tire, the outer ends of which have spikes secured thereto, and the inner ends of which are pivotably mounted in the recesses of the tire;

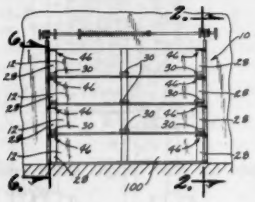
mounting means for pivotably mounting said inner ends of said claws in the recesses of the tire for movement between an extended position, in which said claws are extended with said spikes of said claws extending radially outwardly beyond the upper surface of the treads of the tire, and a retracted position, in which said claws are retracted, with said spikes of said claws lying below the upper surface of the treads of the tire, said mounting means including a plurality of base plates disposed within the recesses of the tire to which the inner ends of said claws are hingeable secured and a plurality of supporting cables disposed within the recesses for securing said base plates in said recesses; and

moving means for pivotably moving said claws between said extended and said retracted positions and for maintaining said claws in said extended and said retracted positions thereof, said moving means including a plurality of actuating cables disposed within the recesses, at least one of which is coupled to each of the claws in one row thereof, said actuating cables being laterally reciprocable to effect pivotable movement of said row of claws.

4,119,133
INSULATED GARAGE DOOR

Cecil R. Wolf, Rock Falls, Ill., assignor to Dwight Carter, Des Moines, Iowa

Filed Jun. 6, 1977, Ser. No. 803,480
Int. Cl.[2] E05D *15/38*
U.S. Cl. 160—209 14 Claims



1. A garage door assembly for a garage door opening having vertically disposed jambs on opposite sides thereof and a header extending between the upper ends of said jambs; said assembly comprising:

a track assembly having a pair of spaced apart tracks, each track having a horizontal upper portion and a vertical lower portion;

stop means on said vertical lower portion;

frame means mounted to said vertically disposed jambs;

mounting means movably mounting each of said vertical lower portions of said track assembly to said frame means for movement from an upper position to a lower position, said mounting means comprising a cam and a cam follower, one of said cam and cam follower being on said frame and the other of said cam and said cam follower being on said vertical portion of said track;

said cam follower being shaped to cooperate with said cam to guide said vertical portion of said track assembly toward said door jamb when said vertical portion moves from said upper to said lower position;

a flexible door having a plurality of rollers retentively guided in said track assembly whereby said rollers of said door are movable from a raised position to a lowered position wherein at least some of said rollers engage said stop means and urge said vertical portion of said track to said lower position;

said door comprising a plurality of enlongated horizontally disposed door panels hinged together in edge to edge relationship about horizontal axes, at least one of said rollers being positioned at each opposite end of each of said panels;

said horizontal upper portion of said track assembly comprising an upper horizontal track and a lower horizontal track, said rollers of at least the uppermost panel of said door being retentively mounted for rolling movement in said upper horizontal track;

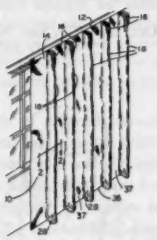
at least a portion of said upper horizontal track being movably mounted with respect to the remaining portion of said horizontal track for movement toward and away from said door header; and

adjusting means for retentively holding said movable portion of said horizontal track against movement from a plurality of selected positions with respect to said header, said adjusting means comprising an adjusting member selectively movably mounted with respect to said frame means and retentively engaging said movable portion of said horizontal track, said adjusting member being selectively movable to cause movement of said movable portion of said horizontal track toward and away from said header.

4,119,134
DRAPERY PLEAT HOLDER

John Edward Morken, 3301 Freeman, Fort Wayne, Ind. 46804

Continuation-in-part of Ser. No. 274,276, Jul. 24, 1972, abandoned. This application Dec. 3, 1973, Ser. No. 421,402
Int. Cl.[2] A47H *1/00*
U.S. Cl. 160—349 R 5 Claims



1. In combination with a drapery pleat producing element adapted for producing folds throughout the entire vertical dimension of said drapery, the combination which comprises:

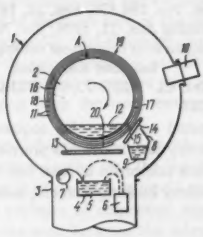
(a) a relatively inflexible U-shaped pleat-producing backing of constant shape wherein a plurality of said U-shaped pleat-producing backings are positioned at intervals along the bottom edge of said drapery; and,

(b) gripping means formed between the confronting surfaces of said U-shaped pleat-producing backing and said drapery at the bottom edge of said drapery whereby a series of linearly vertical folds are produced continuously from the bottom edge of said drapery to the top edge of said drapery and said series of linearly vertical folds approach towards and separate from each other upon contracting and spreading said drapery respectively.

4,119,135
METHOD OF PRODUCING FOIL IN COILS

Jury Fedorovich Shevakin, Telegrafny pereulok, 11/16, kv. 53; Leonid Pavlovich Seleznev, ulitsa Ostrovityanova, 21, kv. 69; Igor Iosifovich Dobkin, 2 Avtozavodsky proezd, 5, korpus 1, kv. 6; Vladislav Alexandrovich Vasiliev, ulitsa Polotskaya, 10, kv. 53; Ljudmila Dmitrievna Kharitonova, Suvorovsky bulvar, 25, kv. 19; Grigory Ilich Kandyba, ulitsa Volgina, 25, korpus 3, kv. 101, and Nikolai Igorevich Parshin, I Ozerkovsky pereulok, 2/16, kv. 11, all of Moscow, U.S.S.R.

Filed May 19, 1977, Ser. No. 798,388
Int. Cl.[2] B22D *45/00*
U.S. Cl. 164—46 2 Claims



1. A method of producing foil in a coil, said method comprising the steps of applying a layer of antiadhesive to the surface of a rotating substrata and condensing metallic vapours in a vacuum on said antiadhesive layer, this resulting in producing a metal layer — the foil, and in forming a coil thereof, both processes — the producing of the foil and forming the coil thereof being effected simultaneously on one rotating substrata

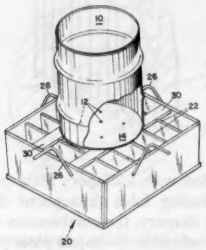
coated with a layer of said antiadhesive so that each next metal layer is formed on the antiadhesive layer applied to the preceding metal layer.

4,119,136

METHOD OF RECOVERING TIN FROM TIN DROSS

Robert Martin Gancarz, Sr., 98 Szetela Dr., Chicopee, Mass. 01021

Filed Oct. 25, 1977, Ser. No. 844,809
Int. Cl.[2] B22D *0/00*
U.S. Cl. 164—121 **1 Claim**



1. The process of recovering tin from tin dross consisting of the steps of:

charging the tin dross in a metal barrel provided with apertures through its bottom,

positioning the barrel on a partitioned steel mold with spacings between the partitions and mold walls,

charging the barrel and mold combination into an annealing furnace maintained at an operating temperature of approximately 700° F for a time interval of between 5 and 6 hours,

allowing the generated molten tin to drop downwardly of the barrel and through the apertures thereof into the mold,

removing the barrel and mold from the furnace and cooling same prior to separation of mold and ingots of solidified tin.

4,119,137

AUTOMATED POST BURN STATION

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

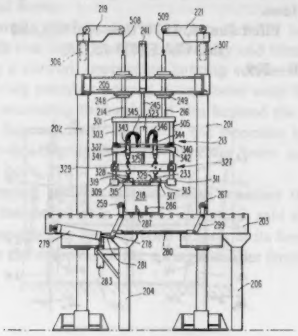
Continuation of Ser. No. 618,772, Oct. 2, 1975, Pat. No. 3,980,126, which is a continuation-in-part of Ser. No. 432,545, Jan. 11, 1974, Pat. No. 3,954,216, which is a continuation-in-part of Ser. No. 395,528, Sep. 10, 1973, Pat. No. 3,861,575, which is a division of Ser. No. 184,338, Sep. 28, 1971, abandoned. This application Jun. 21, 1976, Ser. No. 697,786
The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.
Int. Cl.[2] B22D *25/04;* B23K *3/02*
U.S. Cl. 164—332 **21 Claims**

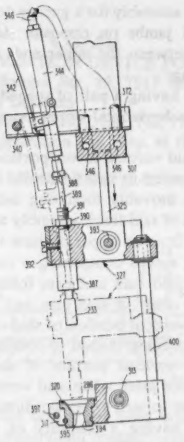
3. An automated apparatus for sequentially forming integrally fused battery terminals on a plurality of storage batteries, each of which comprises at least one battery post element and adjacent battery bushing element, said apparatus comprising:

a. a frame,

b. head means associated with the frame and movable with respect to said frame along a first axis between standby and molding positions, said head means having mold means mounted thereon to matably encircle battery elements of a battery in a battery fusing position when said head means is in said molding position,

c. burning means capable of selectively producing a flame for melting said battery elements when in a burning position, said burning means being mounted in slidable engagement along said first axis on said head means, for





movement with respect to said head means between a first pilot and a second burning position.

4,119,138

STRAIGHTENER FOR A MULTISTRAND CONTINUOUS-CASTING MACHINE

James T. Stull, Evans City, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 710,953, Aug. 2, 1976, abandoned. This application Oct. 27, 1977, Ser. No. 846,236
Int. Cl.[2] B22D *11/12;* B21B *39/00*
U.S. Cl. 164—448 **8 Claims**

1. In a multistrand continuous-casting machine in which two outer strands and at least one intermediate strand travel in parallel paths located close to one another, an improved straightener comprising:

coaxial fulcrum rolls for engaging the bottom faces of the respective strands and defining a common lower tangent line for the strands;

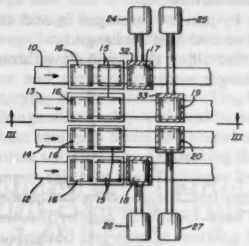
outer and intermediate reaction rolls for engaging the upper faces of the respective strands both preceding and following the fulcrum rolls;

the intermediate and outer reaction rolls which follow the fulcrum rolls being spaced at different distances from the axis of the fulcrum rolls;

respective bottom rolls opposite said reaction rolls; and

drive means operatively connected with the bottom rolls opposite the outer and intermediate reaction rolls which

follow the fulcrum roll and being located outside the paths of the outer strands;



said drive means being aligned with the respective rolls which they drive.

4,119,139

HEAT-EXCHANGER COMPRISING A SYSTEM OF GRANULATE CONTAINING VERTICAL TUBES, AND A METHOD FOR OPERATING THE SAME

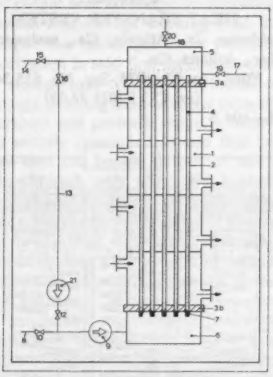
Dick Gerrit Klaren, Hillegom, Netherlands, assignor to Gustav Adolf Pieper, Heemstede, Netherlands

Filed May 17, 1976, Ser. No. 687,219

Claims priority, application Netherlands, May 20, 1975, 7505870

Int. Cl.[2] F28G *13/00*

U.S. Cl. 165—1 **5 Claims**



1. A method of heat exchange comprising flowing liquid heat-exchanging media upwardly as a stream, said stream containing fluidized particles onto some of which material is precipitated from the liquid thereby enlarging the particles, temporarily increasing the flow rate of the stream to fluidize the thus enlarged particles, expanding the stream to decrease the flow rate and permit settling out of a coarse fraction of particles and returning the stream to its original flow rate to readmit particles into the non-expanded stream.

4,119,140

AIR COOLED ATMOSPHERIC HEAT EXCHANGER

Robert E. Cates, Leawood, Kans., assignor to The Marley Cooling Tower Company, Mission, Kans.

Division of Ser. No. 544,648, Jan. 27, 1975, Pat. No. 3,995,689.

This application Nov. 23, 1976, Ser. No. 744,391

Int. Cl.[2] F28B *1/06*; F28D *9/02*; F28F *3/08, 9/00*

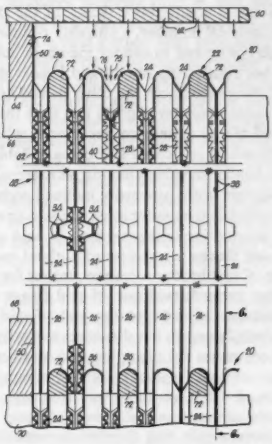
U.S. Cl. 165—67 **9 Claims**

1. Heat exchange apparatus for cooling a hot liquid with ambient derived air comprising:

a plurality of imperforate, initially generally rectangular, thermally conductive, synthetic resin sheets rebent upon themselves to present individual transversely U-shaped structures which are oriented in upright, inverted, juxtaposed disposition in use with adjacent structures being joined to present a heat exchange pack,

the upright sidewalls of each structure being located in horizontally spaced disposition, joined at the upper ends thereof by overlying, integral top bight portions, and presenting essentially upright air passages for horizontal flow of ambient derived air therethrough which enters respective structures of the pack at one upright, open end face of each of the structures below respective top portions and exits from the upright, open opposite end face thereof,

the upright sidewalls of adjacent structures also being in horizontally spaced relationship with means being provided to interconnect and seal the upright, adjacent side margins only of proximal structures for preventing loss of liquid along substantially the entire longitudinal lengths thereof to cause the sidewalls of adjacent structures to define upright, essentially horizontally extending open top



and open bottom liquid conveying liquid passages therebetween which alternate with the air passages and allow liquid delivered to the open tops of the liquid passages to gravitate downwardly therethrough in heat exchange relationship with air moving in crossflow relationship thereto through said air passages and with the cooled liquid discharging from the open bottoms of the liquid passages,

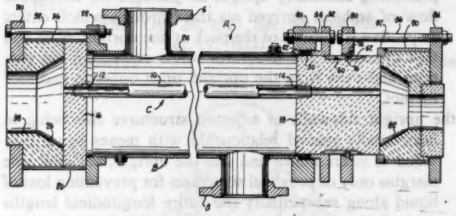
each of said sidewalls being provided with integral projecting segments which extend into the liquid receiving passages to increase the flow path of liquid gravitating downwardly on the surfaces of respective sidewalls and also extending into the area between the sidewalls presenting each air passage for imparting turbulence to the air flowing through corresponding air passages; and

elongated, horizontal support elements extending beneath a sufficient number of the top bight portions of the heat exchange structures in load bearing relationship thereto to fully support the pack without significant deformation at the temperature of the liquid supplied to the pack and under the liquid load thereon.

4,119,141
HEAT EXCHANGER

Bruno H. Thut, 9580 Stafford Rd., Bainbridge, Ohio 44022, and Dale T. Lehman, 5577 Valley La., Solon, Ohio 44139

Filed May 12, 1977, Ser. No. 796,175
Int. Cl.[2] F28F 9/02, 21/02
U.S. Cl. 165—82 2 Claims



1. A heat exchanger of the character described comprising an elongated shell having a tubular cylindrical member having flange members adjacent to its opposite ends, one of said flange members having a counterbore facing in the direction away from said cylindrical member, a plurality of tubes having their opposite ends connected to header members, means including an end member connecting one of said header members to the other of said flange members, the other of said header members having an outside diameter slightly less than the inside diameter of said end of said cylindrical member at which said one of said flange members is located and being slidable therein, said other of said header members having an external circumferential groove therein with outwardly inclined ends, a seal at said end of said cylindrical member at which said one of said flange members is located including packing in said counterbore in said one of said flange members and a gland member slidable on said other of said header members, means for adjusting said gland member towards said one of said flange members, another end member adjacent to the end of said other of said header members facing in the direction away from said cylindrical member, means for clamping said another end member to said other of said header members comprising a sleeve member formed of a plurality of arcuately shaped parts located in said circumferential groove in said other of said header members, a split ring member surrounding said sleeve member and having its radial outer or circumferential surface inclined radially outwardly in the direction away from said end of said cylindrical member at which said one of said flange members is located, a retainer ring member surrounding said split ring member, a clamp plate at the end of said another of said end members at the end thereof facing in the direction away from the end of said cylindrical member at which said one of said flange members is located, and means for adjustably connecting said retainer ring member to said clamp plate.

4,119,142
ARRANGEMENT FOR TRANSFERRING HEAT FROM THE EXHAUST AIR LEAVING AN ENCLOSED VOLUME TO THE INPUT AIR SUPPLIED TO SAID VOLUME

Peter Heinrich Erwin Margen, Nyköping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Dec. 21, 1976, Ser. No. 752,992
Claims priority, application Sweden, Dec. 22, 1975, 7514560
Int. Cl.[2] F28D 15/00
U.S. Cl. 165—104 S 15 Claims

2. An arrangement for the transfer of heat from the exhaust air leaving an enclosed volume to the input air to said volume comprising:

a liquid-filled circuit having;

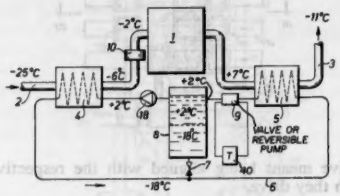
at least one first circulation pump;

at least one first heat exchanger arranged in contact with said input airflow;

at least one second heat exchanger arranged in contact with said exhaust airflow;

at least one by-pass line arranged in said circuit in parallel with said second heat exchanger;

means for controlling the liquid flow through said second heat exchanger; and,

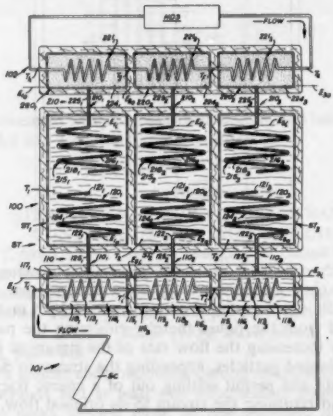


layer type heat store means for supplying heat to said first heat exchanger in the form of heat extracted from said exhaust air, while said second heat exchanger is disconnected for defrosting, having the hot side thereof coupled to said liquid circuit between the output of said second heat exchanger and the input of said first heat exchanger and having the cold side thereof coupled to said liquid circuit between the output of the first heat exchanger and the input of said second heat exchanger, whereby said heat store constitutes said by-pass line.

4,119,143
HEAT TRANSFER SYSTEM

Glen P. Robinson, Jr., Atlanta, Ga., assignor to Scientific-Atlanta, Inc., Atlanta, Ga.

Filed Sep. 22, 1975, Ser. No. 615,343
Int. Cl.[2] F28D 21/00
U.S. Cl. 165—104 S 5 Claims



1. A heat transfer system comprising:

a heat source generating a heated output;

first heat storage means capable of storing heat;

second heat storage means capable of storing heat;

first storage heat transfer link means in a heat exchange relationship with said heated output of said heat source to said first heat storage means to transfer heat from said heated output of said heat source to said first heat storage means;

second storage heat transfer link means in a heat exchange relationship with said heated output of said heat source after said heated output of said heat source has passed

through said first storage heat transfer link means in a heat exchange relationship therewith to transfer heat remaining in said heated output from said heat source after passage through said first storage heat transfer link to said second heat storage means;

said first storage heat transfer link means comprising a first storage working fluid having a prescribed vaporizing temperature and pressure range, a first input heat exchanger carrying the first storage working fluid therein in a heat exchange relationship with said heated fluid output from said heat source to cause said heated output to selectively vaporize said first storage working fluid in said first heat exchanger, said first heat exchanger located at a first input elevation; and a first output heat exchanger operatively connected to said first input heat exchanger for receiving vaporized first storage working fluid from said first input heat exchanger and for returning condensed first storage working fluid to said first input heat exchanger, said first output heat exchanger placing the vaporized first storage working fluid in a heat exchange relationship with said first heat storage means, and said first output exchanger located at a first output elevation higher than said first input elevation so that the heat transferred to the first storage working fluid in said first input heat exchanger vaporizes the first storage working fluid, the vaporized first storage working fluid rises to said first output heat exchanger, and the heat in the vaporized first storage working fluid is transferred to said first heat storage means through said second heat exchanger as long as the temperature of said first heat storage means is lower than the temperature of the heated output of said heat source to cause the vaporized first storage working fluid in said first output heat exchanger to condense whereupon the condensed first storage working fluid flows back to said first input heat exchanger under the force of gravity for revaporization in said first input heat exchanger;

said second storage heat transfer link means comprising a second storage working fluid having a prescribed vaporizing temperature and pressure range, a second input heat exchanger serially connected to said first input heat exchanger so that the heated output of said heat source passes therethrough only after said heated output has passed through said first input heat exchanger, said second input heat exchanger carrying the second storage working fluid therein in a heat exchange relationship with said heated output passing therethrough to cause heat remaining in said heated output after passage through said first input heat exchanger to vaporize said second storage working fluid in said second input heat exchanger, said second input heat exchanger located at a second input elevation; and a second output heat exchanger operatively connected to said second input heat exchanger for receiving vaporized second storage working fluid from said second input heat exchanger and for returning condensed second storage working fluid to said second input heat exchanger, said second output heat exchanger placing the vaporized second storage working fluid in a heat exchange relationship with said second heat storage means and said second output heat exchanger located at a second output elevation higher than said second input elevation so that the heat transferred to the second storage working fluid in said second input heat exchanger vaporizes the second storage working fluid, the vaporized second storage working fluid rises to said second output heat exchanger, and the heat in the vaporized second storage working fluid is transferred to said second heat storage means through said second output heat exchanger as long as the temperature of said second heat storage means is lower than the temperature of the heated output of said heat source after its passage through said first input heat exchanger to cause the vaporized second storage working fluid in said second output heat exchanger to condense whereupon the condensed second storage working fluid flows back to said second input heat exchanger under the force of gravity for revaporization in said second input heat exchanger.

2. A heat transfer system comprising:

first heat storage means capable of storing heat;

second heat storage means capable of storing heat where the temperature in said second heat storage means is normally initially higher than the temperature in said first heat storage means;

heat sink means having an operating fluid to be heated;

first recovery heat transfer link means in a heat exchange relationship with said first heat storage means to transfer heat from said first heat storage means to said operating fluid of said heat sink means;

second recovery heat transfer link means in a heat exchange relationship with said second heat storage means to transfer heat from said second heat storage means to said operating fluid of said heat sink means after said operating fluid has passed through said first recovery heat transfer link in a heat transfer relationship therewith;

said first recovery heat transfer link means comprising a first recovery working fluid having a prescribed vaporizing temperature and pressure range, a first input heat exchanger carrying the first recovery working fluid therein in a heat exchange relationship with said first heat storage means to cause said first heat storage means to vaporize said first recovery working fluid in said first input heat exchanger, said first heat exchanger located at a first input elevation; and a first output heat exchanger operatively connected to said first input heat exchanger for receiving the vaporized first recovery working fluid from said first input heat exchanger, said first output heat exchanger placing the vaporized first recovery working fluid in a heat exchange relationship with the operating fluid of said heat sink means, and said first output heat exchanger located at a first output elevation higher than said first input elevation so that the heat transferred to the first recovery working fluid from said first heat storage means vaporizes the first recovery working fluid, the vaporized first recovery working fluid rises to said first output heat exchanger, and the heat in the vaporized first recovery working fluid is transferred to the operating fluid of said heat sink means through said first output heat exchanger as long as the temperature of the operating fluid of said heat sink means passing through said first output heat exchanger is lower than the temperature of said first heat storage means to cause the vaporized first recovery working fluid in said first output heat exchanger to condense whereupon the condensed first recovery working fluid flows back to said first input heat exchanger under the force of gravity for revaporization in said first input heat exchanger; and,

said second heat recovery link means comprising a second recovery working fluid having a prescribed vaporizing temperature and pressure range, a second input heat exchanger carrying the second recovery working fluid therein in a heat exchange relationship with said second heat storage means to cause said second heat storage means to vaporize said second recovery working fluid in said second input heat exchanger, said second input heat exchanger located at a second input elevation; and a second output heat exchanger operatively connected to said second input heat exchanger for receiving the vaporized second recovery working fluid from said second input heat exchanger and for returning the condensed second recovery working fluid to said second input heat exchanger, said second output heat exchanger connected to said first output heat exchanger so that the operating fluid of said heat sink means passes through said second output heat exchanger only after passage through said first output heat exchanger and placing the vaporized second recovery working fluid in a heat exchange relationship with the operating fluid of said heat sink means after its passage through said first output heat exchanger, said second output heat exchanger located at a second output eleva-

tion higher than said second input elevation so that the heat transferred to the second recovery working fluid from said second heat storage means vaporizes the second recovery working fluid, the vaporized second recovery working fluid rises to said second output heat exchanger, and the heat in the vaporized second recovery working fluid is transferred to the operating fluid of said heat sink means through said second output heat exchanger as long as the temperature of the operating fluid of said heat sink means passing through said second output heat exchanger after passage through said first output heat exchanger is lower than the temperature of said second heat storage means to cause the vaporized second recovery working fluid in said second output heat exchanger to condense whereupon the condensed second recovery working fluid flows back to said second input heat exchanger under the force of gravity for revaporization in said second input heat exchanger.

4,119,144

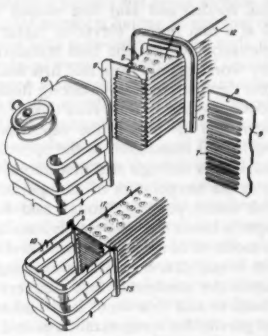
IMPROVED HEAT EXCHANGER HEADERING ARRANGEMENT

Leslie Charles Kun, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 634,652, Nov. 24, 1975, Pat. No. 4,024,623, which is a continuation-in-part of Ser. No. 372,339, Jun. 21, 1973, Pat. No. 3,924,441, which is a division of Ser. No. 189,659, Oct. 15, 1971, Pat. No. 3,757,856. This application Jul. 29, 1976, Ser. No. 709,640

Int. Cl.[2] F28F *9/04*

U.S. Cl. 165—175 **3 Claims**



1. In a heat exchanger including an array of flattened tube-like heat exchange channel elements, wherein each channel element is bounded by thermally conductive pressure withholding walls, with an entrance opening at one end, an exit opening at the opposite end, and wherein adjacent channel elements in said array are disposed in spaced apart relationship, an improved headering arrangement for the array of heat exchange channel elements comprising:

(a) two substantially planar comb-shaped members each having teeth extending from an outer plate segment into the array of heat exchange channel elements from opposite sides at an end section thereof such that the channel elements are in register with corresponding gaps between adjacent teeth of the comb-shaped members and the oppositely extending teeth of respective comb-shaped members are contiguously aligned to form a leak-tight seal to said channel elements; and

(b) a header leak-tightly secured to the outer plate segments of the comb-shaped members such that said header and the comb-shaped members together form a tank enclosure for fluid introduced to or withdrawn from the channel elements of said heat exchanger.

4,119,145

COLUMN STRUCTURE ENABLING HANDLING APPLIANCES ON THE SEABED, PARTICULARLY FOR THE ASSEMBLY AND MAINTENANCE OF WELL-HEADS

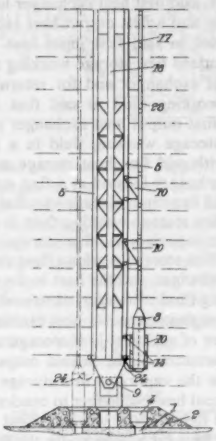
Samuel Tuson, Mesnil le Roi, France, assignor to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H., Boulogne, France

Filed May 31, 1977, Ser. No. 802,051

Claims priority, application France, Jun. 9, 1976, 76 17405

Int. Cl.[2] E21B *7/12*

U.S. Cl. 166—339 **7 Claims**



1. Column structure for handling appliances on the seabed, particularly for the assembly and maintenance of well-heads, or other devices intended to cooperate with the orifices of wells in the seabed, said column being coupled to a base constructed on the seabed over a certain number of drilling wells and comprising a lower part coupled to said base, a body part formed essentially by a plurality of elongated vertical members, and an upper structure forming at least one platform, trolleys movable between said upper structure and said lower part of said body part and adapted for carrying well-heads or other devices between said upper structure and said base and for releasing same upon reaching said lower part at a position above corresponding well orifices, said elongate vertical members forming said body part having lateral walls constituting guide rails for said trolleys, and said trolleys being movably disposed on said guide rails for guided movement therealong.

4,119,146

SURFACE CONTROLLED SUB-SURFACE SAFETY VALVE

Frank H. Taylor, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 18, 1977, Ser. No. 798,180

Int. Cl.[2] E21B *43/12*

U.S. Cl. 166—72 **13 Claims**

1. A surface controlled subsurface safety valve comprising:

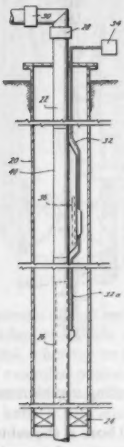
valve housing means for defining a flow path;

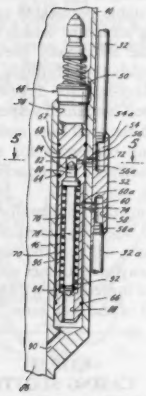
valve closure means associated with said valve housing means and adapted for movement between positions opening and closing said flow path;

means responsive to control pressure, including control pressure chamber means, and adapted to move said valve closure means to a position opening said flow path when said control pressure chamber means is pressurized a minimal amount;

means for resiliently urging said valve closure means to a position closing said flow path;

pilot valve means having a first position wherein pressurized control fluid is prevented from communicating to said control pressure chamber means and wherein said means responsive to control pressure is at least substantially pressure balanced and is affected by substantially equal but opposite fluid pressure forces and having a second position wherein pressurized control fluid communicates with said control pressure chamber means, said pilot valve means including:





valve means for controlling communication of control fluid to said control pressure chamber means,

means for resiliently biasing said valve means to said first position, and

pressure responsive means for moving said valve means to said second position when said means is pressurized a sufficient amount.

4,119,147

PUMPDOWN SAFETY VALVE

Henry P. Arendt, and Russell A. Johnston, both of Dallas, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 20, 1976, Ser. No. 734,110
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—155 **18 Claims**

1. A pumpable safety valve for use in a well comprising:

a valve section including:

valve housing means having a bore extending axially therethrough,

valve member means mounted in said bore and adapted for movement between positions opening and closing said bore, and

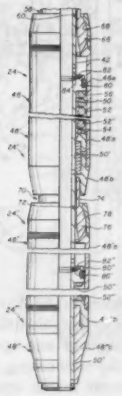
means responsive to control pressure adapted to move said valve member means to a position opening said bore;

a force exerting section including:

tubular mandrel means,

sleeve means adapted to move axially within said tubular mandrel means,

spring biasing means biasing said sleeve means to a first position with respect to said tubular mandrel means;



tube means within said valve housing means adapted to move said valve member means to a position closing said bore;

swivel connecting means connecting said tubular mandrel means and said valve housing means;

one of said sleeve means and said tube means extending through said swivel connecting means to engage the other of said sleeve means and said tube means; and

engaging means associated with each of said sleeve means and said tube means to permit engagement of said sleeve means and said tube means during articulation; and

said tube means moves said valve member means to a position closing said bore when said sleeve means is in said first position.

4,119,148

PERFORATING APPARATUS AND METHOD FOR WELL CASING

Eldon N. Deardorf, 1611 Red Fox Dr., Dayton, Ohio 45432

Filed Sep. 7, 1977, Ser. No. 831,229
Int. Cl.[2] E21B *43/11, 47/12*
U.S. Cl. 166—250 **8 Claims**

1. In an apparatus for perforating a well casing:

a frame supported for lowering into the well casing; a drilling tool supported on said frame, said drilling tool comprising an air-operable drill and a drill bit connected to said drill and confronting the portion of the well casing to be perforated;

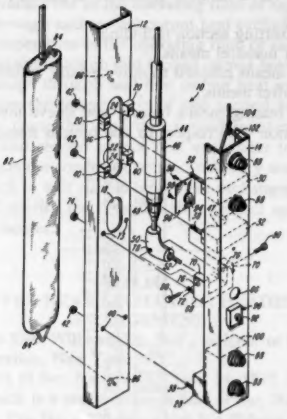
an inflatable bladder mounted on said frame for advancing the frame in a direction toward the portion of the well casing to be perforated to press the drill bit against the portion of the well casing; and

spring means for biasing the frame in a direction away from the portion of the well casing.

7. A method for perforating a well casing, comprising:

providing an apparatus including a frame, an inflatable bladder mounted on one side of the frame, an air drill mounted

on the frame and a drill bit connected thereto and extending from a generally opposite side of the frame, spring means mounted along the generally opposite side of the frame, an air compressor for providing air to said air drill and said bladder, and vacuum means connected to said bladder;



energizing said compressor to operate said air drill and inflate said bladder so that said drill bit drills a perforation into the well casing and said spring means biases said frame away from the well casing; and

energizing said vacuum means upon completion of said perforation to deflate said bladder so that said spring means moves said frame away from said casing and said drill bit out of said perforation.

4,119,149

RECOVERING PETROLEUM FROM SUBTERRANEAN FORMATIONS

Ching H. Wu, Golden, Colo.; Alfred Brown, Houston, and Wilbur L. Hall, Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,642
Int. Cl.² E21B *43/24*
U.S. Cl. 166—266 **7 Claims**

1. In a process for recovery of petroleum from a subterranean formation wherein steam is injected via an injection well into said subterranean formation, wherein petroleum is produced via a production well from said formation, wherein injection of steam into said formation is continued until a steam front reaches said production well such that steam condensate in admixture with petroleum enters the bore of said production well, the improvement which comprises:

a. flashing within said production well bore, said mixture of petroleum and steam condensate produced from said formation at a pressure less than the pressures of said formation for production of a vapor phase comprising steam and light hydrocarbons and a liquid phase comprising petroleum;

b. separating said vapor phase from said liquid phase; and

c. injecting at least a portion of said separated vapor phase with additional steam, into said formation, via said injection well, for enhancing production of petroleum from said formation via said production well.

4,119,150

METHOD FOR TREATING WELL BORES AND APPARATUS THEREFOR

Mark Stayton Froelich, 4400 Memorial, #2164, Houston, Tex. 77007

Filed Jan. 24, 1977, Ser. No. 762,025
Int. Cl.² E21B *43/02*
U.S. Cl. 166—27[illegible] **29 Claims**

27. A method for treating a subterranean site in a well bore which comprises

injecting into the well bore at the subterranean site a substantially occluding quantity of a curable resin material foam which upon curing forms a substantially chemically and dimensionally stable permeable resin foam mechanically rigid occluding structure which is permeable to liquids and gases while effectively preventing the passage of subterranean solids therethrough.

29. A charger-mixer-injector device for use in a well bore which comprises a self-contained suspended capsule adapted to be lowered through the well bore and having therein

(a) means defining reservoirs for a chargeable supply of precursor ingredients for producing a curable resin foaming material,

(b) mixing and injector means for mixing the precursor ingredients and injecting the mixed precursor ingredients into the well bore, wherein the capsule is operatively flow connected by way of feed lines with a replenishing supply of the precursor ingredients which are located at or above the surface end of the well bore.

4,119,151

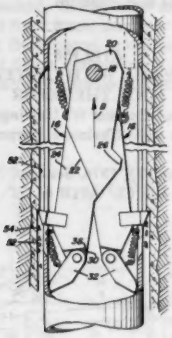
CASING SLOTTER

Homer Grafton Smith, Houston, Tex., assignor to Homco International, Inc., Houston, Tex.

Filed Feb. 25, 1977, Ser. No. 771,970
Int. Cl.² E21B *43/112, 29/00*
U.S. Cl. 166—298 **10 Claims**

1. A tool for forming vertical slots in a well sidewall, said tool comprising means to mount said tool on a drill string in fluid flow communication therewith, said tool comprising knife means, means to mount said knife means in a retracted position within said tool, means responsive to pressurization of the well fluid to move said knife means into cutting relationship with the well sidewall, whereby said tool will cut said vertical slots in said well sidewall upon said tool and said drill string being vertically reciprocated in said well, said knife means comprising a pair of blades mounted on a pivot pin in said tool for motion in a scissor-like manner, said knife means comprising a pair of machine tool-like knife points mounted one on each of said blades, means to move said knife points out of cutting relationship with said well sidewall on each down-

stroke of said tool in said well, said means to move said knife points out of cutting relationship comprising a pair of cams pivotally mounted one at the lower end of each of said blades, stop means defining an extended position of each cam wherein a portion of said cam extends radially outwardly of said tool a greater distance than the radially outwardly extend of said cutting point, said cam being moved into said extended position during each downstroke of said tool in said well, said cam having a nose portion adapted to slide on said sidewall during each upstroke of said tool, whereby on each upstroke said cam rotates away from said extended position about its pivot on its respective blade to permit the pressurized well fluid to extend said blade to urge said knife points into their cutting relationship.

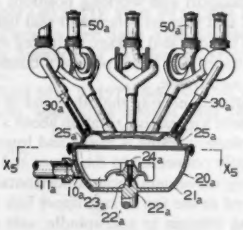


4,119,152

LONG-DISTANCE SPRAYING DEVICE FOR FIRE HOSE

Yoshio Koyama, 8-10, 2-Chome, Shonaitakaramachi, Toyonaka City, Osaka Prefecture, Japan

Filed Jan. 26, 1977, Ser. No. 762,627
Int. Cl.² A62C *27/00*
U.S. Cl. 169—25 **1 Claim**



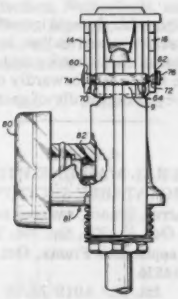
1. A spraying device for the discharge end of a fire hose, comprising a bulb member, a connecting pipe provided at one side of said bulb member, a plurality of play pipes provided at another side of said bulb member, and a plurality of nozzles attached to said play pipes respectively; said bulb member comprising a round vessel, a round cover provided on the top of said vessel, and a vertical supporting member provided through the bottom of said vessel, said round vessel having a side wall provided with a water inlet, said round cover being provided with an annular shoulder in its periphery, said annular shoulder being provided with a plurality of water outlets in a radial arrangement, said water outlets being substantially smaller than said water inlet, the upper end of said vertical supporting member projecting into said vessel, the lower end of said vertical supporting member being fixed to base means, a middle portion of said supporting member being fixed to the bottom of said vessel, said upper end of said supporting member being provided with impeller means in a relatively rotatable relation thereto; one end of said connecting pipe being connected to said water inlet in a substantially tangential relation to said side wall, said play pipes each being connected at one end to respective ones of said water outlets, the other ends of said play pipes being connected to said nozzles, said nozzles each being provided with an annular water conduit, said nozzles being provided with means to vary the angle thereof in relation to the corresponding play pipe, said play pipes and the corresponding nozzles each providing a water conduit substantially narrower than the other end of the connecting pipe.

4,119,153

TAMPER-PROOF FIRE EXTINGUISHER

Richard H. Avant, Churchville, N.Y., assignor to Bernzomatic Corporation, Rochester, N.Y.

Filed Nov. 1, 1976, Ser. No. 737,763
Int. Cl.² A62C *13/00*
U.S. Cl. 169—75 **8 Claims**



1. In a hand-held fire extinguisher having a cylinder with a fire extinguishing mass therein under pressure, a valve in communication with a nozzle, a trigger for opening said valve which is pivotally connected to the body of said valve and having two opposed side members, and a handle facing said trigger, the improvement wherein the body of said valve has a bore and the trigger has a pair of apertures in said side members and aligned with the ends of the bore, a breakable sealing pin inserted in the valve bore and through both of the aligned trigger apertures, said sealing pin having enlarged end portions exterior of the apertures for maintaining the pin in a substantially fixed longitudinal position and means for effecting the severing of same upon movement of the trigger to discharge the fire extinguisher comprising two points of weakness disposed at opposite end portions of the pin and aligned between the trigger side members and the ends of the bore when the pin is fixed in position by the enlarged end portions.

4,119,154

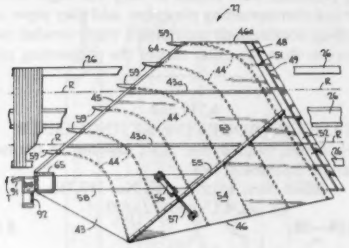
METHOD AND APPARATUS FOR TREATING BALLAST

John R. Miller, Charlotte, N.C., assignor to Southern Railway Company, Washington, D.C.

Filed Feb. 18, 1977, Ser. No. 770,277
Int. Cl.² E01B *27/10*
U.S. Cl. 171—16 **27 Claims**

1. A plow structure for removing ballast from beneath the rail ties of a railway, comprising, a flat, rigid and imperforae plate disposed for movement beneath the rail ties in a forward direction of travel along the railway, said plate having a leading edge sloping rearwardly in one direction relative to the longitudinal axis thereof, a plurality of spaced depending blades fixedly mounted on the underside of said plate along said leading eedge and extending toward a side edge of said plate, a portion of each said blade being curved toward said side at said leading edge for cutting and shifting the ballast toward said side upon plate movement, the remainder of said blades each being substantially straight and sloping rearwardly

toward said side edge for conveying the cut ballast outwardly of said side, and a depending scraper blade spaced from said plate and mounted thereto along the trailing edge thereof for defining an opening, said scraper blade sloping rearwardly



toward said side edge, whereby said imperforate plate prevents any separation of said ties and ballast located therebetween during plate movement, and whereby said opening permits the ballast between the ties to fall forwardly of said scraper blade to be thereby conveyed outwardly of said side of said plate.

4,119,155

AGRICULTURAL MACHINE WITH FOLDING ROTATABLE SECTIONS

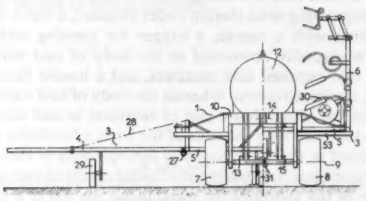
Jacques Rifflart, Arras, France, assignor to CER, France

Filed Oct. 4, 1976, Ser. No. 728,967

Claims priority, application France, Oct. 10, 1975, 75 31329; May 10, 1976, 76 14526

Int. Cl.[2] A01B *73/00*

U.S. Cl. 172—311 **3 Claims**



1. An agricultural machine, comprising;

a chassis having a longitudinal axis and having means for supporting the chassis on a generally flat ground for travel along the longitudinal axis;

a frame having a central section mounted on a non-rotatably secured to the chassis, having two lateral sections pivotably supported on mutually opposite lateral portions of the central section to extend in normal use transversely of the axis, and having a plurality of agricultural tools secured to the several sections at locations spaced from the axis to contact the ground in said normal use, said lateral sections being generally longitudinally coextensive with said central section;

first articulation means for permitting rotation of each lateral section with respect to said central section between a working position thereof for said normal use, in which the respective agricultural tools extend down from the section for said contacting of the ground, and an intermediate position in which said tools extend parallel to the longitudinal axis, to effect the pivotable supporting of the lateral sections on the central section, the first articulation means comprising two rigid members parallel to the longitudinal axis and means for mounting each member on the central section to permit rotation of the member with respect to said central section about a transverse axis;

second articulation means for permitting rotation of each lateral section with respect to said central section between the intermediate position thereof and a folded position for road travel, in which folded position the lateral sections extend parallel to the longitudinal axis, the second articulation means comprising a pivot for each lateral section, each pivot being mounted on one of the rigid members and parallel thereto; and

means for effecting said rotations.

4,119,156

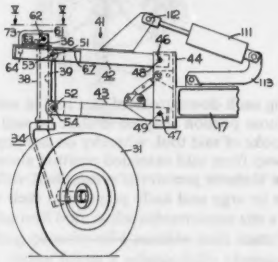
IMPLEMENT FRAME WITH CASTER WHEEL AND LOCK THEREFOR

Keith A. Wheeler, and Dawson W. Hastings, both of La Porte, Ind., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 13, 1976, Ser. No. 749,723

Int. Cl.[2] A01B *63/22*

U.S. Cl. 172—386 **8 Claims**



6. In combination with an implement frame:

a caster wheel support including an upstanding spindle,

a ground engaging wheel rotatably mounted on the lower end of said support,

a parallel linkage interconnecting said spindle to said implement frame for raising and lowering said implement frame between transport and working positions and permitting rotation of said support relative to said linkage about the axis of said spindle, said linkage including upper and lower links, said upper link being pivotally connected at one of its ends to said frame,

means pivotally connecting the other end of said upper link to said spindle for relative rotation about a horizontal axis as said implement frame is raised and lowered,

a latch pivotally connected to the upper end of said spindle for swinging movement about a horizontal axis, and

a ramp secured to the top of said upper link in substantially surrounding relation to said spindle, said ramp having a smooth, flat camming surface in confronting relation to said latch, said ramp including wall means defining a recess into which said latch extends to lock said support against rotation about the spindle axis only when said frame is in its lowered position.

4,119,157

CONTROL FOR CABLE PLOWS AND THE LIKE

Paul R. Schuck, Davenport, and John M. Baylor, Bettendorf, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Continuation of Ser. No. 648,347, Jan. 12, 1976, abandoned. This application Sep. 26, 1977, Ser. No. 836,927

Int. Cl.[2] E02F *5/02*; F16L *1/02*

U.S. Cl. 172—477 **5 Claims**

1. A plow, including a vehicle and an elongated vertical blade, the improvement comprising:

a plow positioning assembly, including a support frame having support rails, means for pivotally mounting said support frame to said vehicle, piston means interconnect-

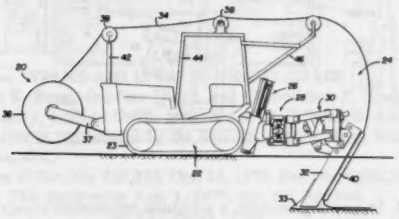
ing said support frame and said vehicle for tilting said support frame,

a relatively fixed frame assembly having two vertically spaced rails generally transverse to the longitudinal axis of said vehicle,

means for slidably supporting said vertically spaced rails to said support rails for slidable movement of said vertically spaced rails relative to said support rails,

a slide frame assembly having slide members slidably supported on said fixed frame assembly rails,

a double acting fluid piston interconnected between said fixed and slide frame assemblies for slidably shifting said slide frame generally transverse to the longitudinal axis of said vehicle,



said slide frame assembly having a vertical pivot extending between said slide members,

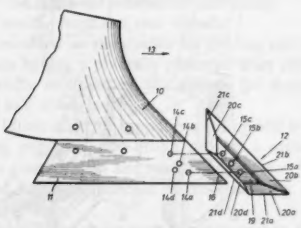
a plow frame comprising a plurality of vertical and horizontal frame members, forming a box-like frame assembly, said frame pivotally supported on said vertical pivot and a pair of angularly related fluid pistons, each piston having a cylinder portion pivotally supported by a collar between its ends on said slide frame assembly between said slide members and each said piston having an extensible rod portion pivotally connected to said plow frame, said pistons adjusting the angular relation of said blade relative to said vehicle.

4,119,158

ADJUSTABLE TIP FOR PLOUGH SHARE

Erik Herbert Carlsson, and John Axel Karlsson, both of Overum, Sweden, assignors to Aktiebolaget Overums Bruk, Overum, Sweden

Filed May 9, 1977, Ser. No. 794,758
Claims priority, application Sweden, May 14, 1976, 7605524
Int. Cl.[2] A01B *15/04*
U.S. Cl. 172—704 **5 Claims**



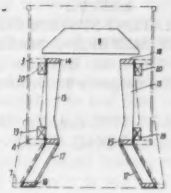
1. A plough having a share with an adjustable and removable plough tip for attachment to the bottom front portion of said share, comprising at least three fixed points on both said share and said plough tip, at least two points on said share being arranged to align with two points on said plough tip, means co-acting with said points for removably locking said plough tip to said share in a predetermined position, said points being apertures in said share and said plough tip respectively, said apertures in the share and plough tip, when aligned, having said means to lock said share to said plough tip in a selected position, said apertures in said plough tip being in alignment and located equidistant from adjacent apertures, said points on the plough tip having the capability of permitting the peripheral edges of said plough tip to assume a multiplicity of positions on said share, said apertures in said share being arranged whereby the first aperture is located in the outer lower front part of said share, a second aperture being located upwardly and rearwardly from said first aperture and at an angle of approximately 45° to the horizontal plane, and a third aperture being located obliquely below said second aperture, and the distance between said first and second apertures being equal to the distance between the first and third apertures, whereby the entire periphery of said plough tip can be used as a cutting edge.

4,119,159

PILE DRIVING APPARATUS

Dirk Arentsen, Leiderdorp, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Oct. 12, 1977, Ser. No. 841,443
Claims priority, application United Kingdom, Oct. 18, 1976, 43219/76
Int. Cl.[2] E02D *7/00*
U.S. Cl. 173—133 **10 Claims**



1. A pile driving apparatus comprising a hammer and hammer operating mechanism mounted above a downwardly extending pile sleeve having an internal cross-section dimensioned to receive the top of a pile of a first diameter and including outwardly flaring means at its lower end forming a lead-in for said pile, whereby the apparatus may be guided onto and supported on the top of a pile to be driven with the top of the pile resting against an anvil which is struck by the blows of the hammer, in combination with an adaptor fitted within the pile sleeve and having an internal cross-section dimensioned to receive the top of a pile of smaller diameter than said first diameter, said adaptor being fabricated as a unit and comprising a plurality of vertically extending ribs rigidly interconnected by at least one ring and including outwardly flaring means at their lower ends forming a lead-in for said smaller diameter pile, and interconnecting means rigid with at least one of and extending between said adaptor unit and pile sleeve and preventing withdrawal of said adaptor unit from the pile sleeve.

4,119,160

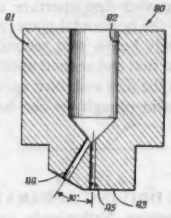
METHOD AND APPARATUS FOR WATER JET DRILLING OF ROCK

David A. Summers, Rolla, Mo.; Marian Mazurkiewicz, Wroclaw, Poland; Dwight J. Bushnell, Corvallis, Oreg., and James Blaine, Rolla, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Jan. 31, 1977, Ser. No. 763,926
Int. Cl.[2] E21B *7/18*
U.S. Cl. 175—67 **4 Claims**

4. An energy efficient method of drilling rock by utilizing a high pressure source for generating high velocity water jet streams which are ejected from a nozzle and directed against rock to be drilled along predetermined drilling axis comprising the steps of:

providing a drilling nozzle connected to the high pressure source and formed with two jet orifices with a first orifice being directed along the drilling axis and a second orifice being directed forwardly at an acute angle with respect to said first orifice and with the diameters of the respective orifices being in the approximate ratio of 1:2;



pressurizing the source so as to provide a water jet velocity from said orifices in excess of 1000 ft/sec; and

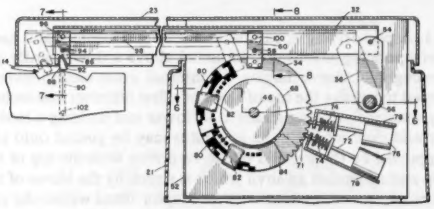
rotating said nozzle about said drilling axis at rotational speeds of approximately 1000 rpm.

4,119,161

AUTOMATIC OPERATING SYSTEM FOR LEVER TYPE POSTAGE METERING MACHINE

Robert John Price, El Cajon, and Lawrence Joseph Kamm, San Diego, both of Calif., assignors to Orbitran Company, Inc., Lakeside, Calif.

Filed Jan. 24, 1977, Ser. No. 761,728
Int. Cl.² G01G *19/413*
U.S. Cl. 177—3 **13 Claims**



1. In a machine for operating postage selector levers of a lever type postage metering machine, the combination comprising:

operating linkage means for each selector lever on said postage machine, said linkage means comprising first and second spaced apart link means connected by an elongated bar and mounted for oscillatory motion about spaced apart fixed centers and thereby defining a four bar linkage,

lever engaging means mounted on one end of said operating linkage means, and movable in an arc following the end of said lever about the pivot axis of said lever, said lever engaging means comprising a V-shaped notch formed in one end of a link member pivotally connected to said bar for engaging the end of said selector lever, and

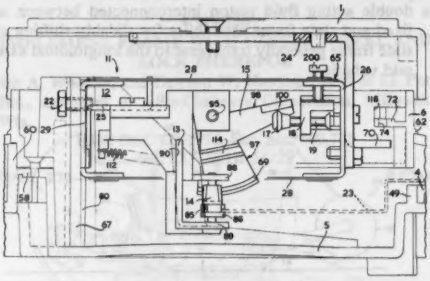
control means responsive to an input selection signal for moving selected ones of said operating linkage means for movement of said levers to selected positions, said control means comprising a drive member mounted on a rotatable drive shaft for each of said operating linkage means, and a reversible motor connected to said shaft for driving said shaft in alternate directions, means drivingly connecting said shaft to said drive members, and means for individually latching said drive members in selected positions.

4,119,162

KITCHEN OR HOUSEHOLD WEIGHING BALANCE

Peter Ackeret, Kusnacht, Switzerland, assignor to Salter Housewares, Limited, West Bromich, England

Filed Dec. 15, 1976, Ser. No. 750,883
Claims priority, application United Kingdom, Dec. 16, 1975, 51376/75; Dec. 16, 1975, 51377/75
Int. Cl.² G01G *3/08, 23/14*
U.S. Cl. 177—229 **10 Claims**



1. In a spring balance, a weighing mechanism comprising:

(a) a parallel motion leaf spring unit which deflects vertically under load,

(b) a movable weight indicating member connected to a gear portion rotatably mounted to turn about a vertical axis,

(c) lever means for controlling angular deflection in a horizontal plane of said weight indicating member,

(d) said lever means being mounted for angular movement in a vertical plane,

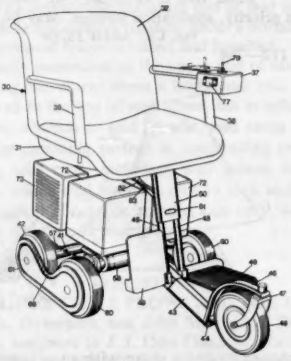
(e) said lever means including integral gear teeth which mesh directly with said pinion in order to transmit drive to the weight indicating member.

4,119,163

CURB CLIMBING WHEEL CHAIR

Douglas Ball, 58 Pacific Ave., Senneville, Quebec, Canada (H9X 1A9)

Filed Oct. 3, 1977, Ser. No. 839,033
Int. Cl.² B62D *61/12, 5/02*
U.S. Cl. 180—6.5 **11 Claims**



1. A self-propelled wheel-chair comprising in combination,

a seat assembly mounted on a frame,

a first pair of drive wheels on a horizontal fixed axis supporting the frame, each of the first pair positioned on either side and below the seat assembly,

two independent driving means, one for forward and backward rotation of each of the first pair of drive wheels,

a second pair of wheels on a common axis parallel to the

horizontal fixed axis, the second pair of wheels having drive connecting means with adjacent first pair of drive wheels such that one of the two independent driving means drives one of the first pair of drive wheels, and, through the drive connecting means, one of the second pair of drive wheels,

a pair of link arms located one on each side of the seat assembly, each of the pair of link arms pivotally mounted from the frame about said fixed axis and supporting one of the second pair of drive wheels on the common axis,

power means for pivoting the pair of link arms together through a movement range of greater than 180°,

and a support means attached to the frame in front and below the seat assembly.

4,119,164

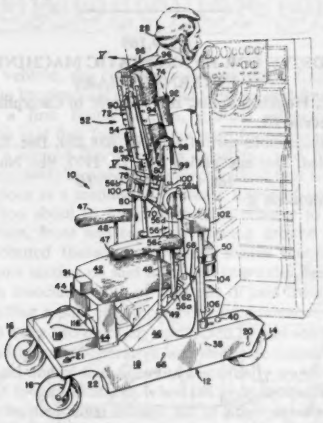
STAND-AID INVALID WHEELCHAIR

Robert K. Fogg, Jr., San Diego, and Christopher P. Staehli, Monterey, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 625,220, Oct. 23, 1975, Pat. No. 4,054,319. This application Aug. 1, 1977, Ser. No. 820,964

Int. Cl.[2] B62D *11/04*

U.S. Cl. 180—6.5 **6 Claims**



1. An invalid stand-aid wheelchair including:

a chassis having front and rear wheels;

a motor mounted on the chassis for driving said wheels;

said chassis having a pivotally mounted knee rest;

a seat fixedly mounted on the chassis for supporting the invalid in a sitting position;

a flexible lifting strap for supporting the invalid in lifting and standing positions, said lifting strap in a seated position lying in contact with and conforming to said fixed seat;

articulated linkage connected to the chassis for supporting the lifting strap;

a freely movable backrest assembly mounted on said linkage and supporting the back of the invalid throughout a lifting and lowering movement from the seated position to and from a standing position;

means for clamping the invalid against the backrest; and

means connected between the chassis and the linkage for moving said backrest and lifting strap to create a minimum sliding movement between the surface of the backrest and the surface of the lifting strap to avoid friction with the respective portions of the invalid's body that may cause irritation and disheveling of his clothes.

4,119,165

ARTICULATED VEHICLES

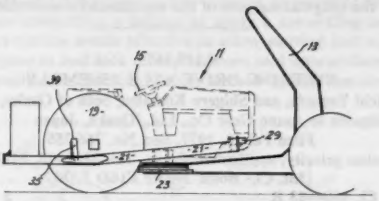
Cyril Embley Bowra, Bayswater, Australia, assignor to B.H.B. Engineers Pty. Ltd., Bayswater, Australia

Filed Apr. 18, 1977, Ser. No. 788,323

Claims priority, application Australia, May 20, 1976, PC5995

Int. Cl.[2] B62D *53/02*

U.S. Cl. 180—14 A **3 Claims**



1. An articulated vehicle comprising a prime mover portion and a wheeled load supporting portion interconnected by an articulated structure, said prime mover portion being provided with a power source, driven wheels and a power transmission for transmitting drive between said power source and said wheels, said prime mover portion further including a cast structure for providing chassis support for said power source and said power transmission, said articulated structure comprising an elongated frame positioned beneath said prime mover portion and a turntable carried by said frame, said turntable being journalled to said load supporting portion for permitting relative rotation between said prime mover portion and said load supporting portion about a substantially vertical axis, said frame having spaced bearing means defining a pivot axis parallel to and vertically in line with a longitudinal central axis of said prime mover portion, said cast structure being journalled adjacent its front and rear end portions in said spaced bearing means for pivotal movement of said prime mover portion upon said frame about said axis for isolating stresses of said load supporting portion from said prime mover portion.

4,119,166

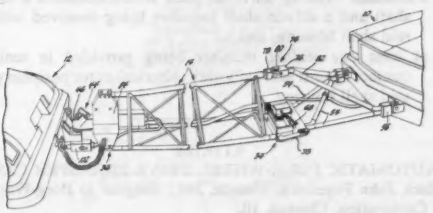
DUAL-VEHICLE OPERATING SYSTEM

Richard F. Ayotte, Livonia, and Trevor O. Jones, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 1, 1977, Ser. No. 812,179

Int. Cl.[2] B60T *7/20*

U.S. Cl. 180—14 R **3 Claims**



1. A dual-vehicle operating system comprising; a manually operated lead vehicle; an automatically operated trail vehicle; signal means on said lead vehicle for emitting signals proportional to the input of the operator; servo control means on said trail vehicle for changing the operation thereof in response to the signals emitted by said lead vehicle signal means; a mechanical connection of predetermined length mechanically and pivotally connected between the lead and trail vehicles; force sensing means on said mechanical connection for determining the presence of any longitudinal force along the longitudinal

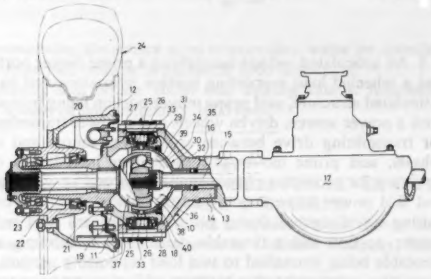
axis of said mechanical connection between the lead and trail vehicles; said servo control means on said trail vehicle being responsive to said force sensing means for varying the operation of the trail vehicle such that the force between the vehicles is returned to zero; and means on said lead vehicle, said trail vehicle and said mechanical connection for steering said trail vehicle in response to steering of said lead vehicle and for maintaining the longitudinal axis of the trail vehicle aligned with the longitudinal axis of the mechanical connection.

4,119,167

STEERING DRIVE AXLE ASSEMBLY

Shinichi Yamada, and Shigeru Komatsu, both of Osaka, Japan, assignors to Asano Gear Co., Ltd., Osaka, Japan

Filed Feb. 8, 1977, Ser. No. 766,755
Claims priority, application Japan, Jul. 28, 1976, 51-90667
Int. Cl.[2] B60K *17/30;* F16D *3/00*
U.S. Cl. 180—43 R **5 Claims**



1. A steering drive axle assembly which comprises:
a steering knuckle having an integral reduced portion rigid with one end of an axle housing;
a socket member having its integral reduced portion secured to an internal extremity of a wheel mounting spindle, said socket member being supported by a pair of substantially vertically spaced king pins which are in coaxial alignment and mounted respectively to an upper wall and a lower wall of said steering knuckle so as to be movable about said king pins;
a shell housing which includes a substantially semi-spherical portion and an integral reduced extension each of which is hollow, said substantially semi-spherical portion being provided with a smoothly spherical outer periphery and disposed within said socket member;
said reduced extension being secured at one end to an inside wall of said steering knuckle;
a constant velocity universal joint which connects a drive shaft and a driven shaft together being received within said shell housing; and
at least one sealing member being provided in sealing contact against said smoothly spherical outer periphery of said shell housing.

4,119,168

AUTOMATIC FOUR-WHEEL DRIVE TRANSFER CASE

Mark John Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 603,833, Aug. 11, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,496
Int. Cl.[2] B60K *17/34;* F16D *15/00*
U.S. Cl. 180—49 **9 Claims**

1. In a torque transfer assembly including a housing, an input shaft rotatably supported by said housing, first and second output shafts rotatably supported by said housing, and means coupling said input shaft with said output shafts for transfer of torque thereto; the improvement wherein said coupling means comprises an overrunning clutch having a first element rotatable with said first output shaft and defining a first clutch race, a second element rotatable with said second output shaft and defining a second clutch race, wedging means between said clutch races and movable between a clutch engaging position wherein torque is transferred to said second output shaft and a clutch disengaging position wherein torque is not transferred to said second output shaft, and means biasing said wedging

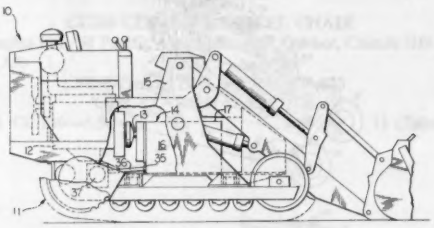
means toward said clutch engaing position, said biasing means including friction means movable with said wedging means, and resilient means biasing said friction means toward frictional engagement with said housing for effecting said biasing of said wedging means toward said clutch engaging position, said friction means also being biased toward frictional engagement with said housing by centrifugal force.

4,119,169

PUMP DRIVE FOR HYDROSTATIC MACHINES WITH EXTERNAL GEARS

Donald L. Hopkins, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 638,234, Dec. 8, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 773,046
Int. Cl.[2] B60K *17/10*
U.S. Cl. 180—66 R **10 Claims**



1. In a vehicle comprising a frame, ground-engaging means for propelling said vehicle over the ground, an engine mounted on the frame and having a drive shaft with a drive gear driven thereby, said drive shaft extending from said engine, a pair of hydrostatic motor means for driving the ground-engaging means, conduit means communicating with the hydrostatic motor means, a hydrostatic drive pump compartment structure mounted on the frame, a pair of hydrostatic pump means disposed within said pump compartment structure, mechanical adjustment means for individually controlling displacement of each of said pair of hydrostatic pump means, mechanical linkage means for simultaneously controlling the displacements of both of said pair of hydrostatic pump means and mechanical drive means disposed on said pump compartment structure for driving said hydrostatic pump means, an improvement comprising: using as said mechanical drive means:
a first pair of gears, each of said first pair of gears being meshed with and driven by said drive gear;
means for removably mounting each of said first pair of gears externally to said pump compartment structure;
a pair of pump drive shafts; and

means for removably drivingly connecting each of said pump drive shafts to a respective one of said pair of gears, said pump drive shafts passing into said pump compartment structure and driving a respective one of said pair of hydrostatic pump means;

using as said pair of hydrostatic motor means;

a pair of hydrostatic motors mounted externally of said hydrostatic drive pump compartment adjacent to said ground-engaging means; and

using as said conduit means;

pipe means which interconnect said pair of hydrostatic motors each respectively with a respective one of said pair of hydrostatic pump means.

4,119,170

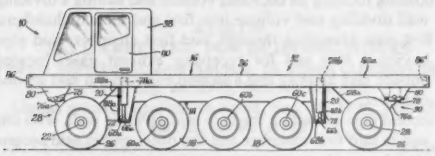
INTERACTING STEERING-SUSPENSION SYSTEM FOR A WHEELED VEHICLE AND THE LIKE

Brian K. Hutcherson, P.O. Box 712, Oswego, Ill. 60543

Filed Jun. 29, 1977, Ser. No. 811,169

Int. Cl.[2] B62D *3/02*

U.S. Cl. 180—79 **12 Claims**



1. In a vehicle, the combination comprising frame means defining the longitudinal axis of said vehicle, said frame means including a first frame section, ground engaging means mounted on said first frame section, said frame means further including a second frame section overlying said first frame section, adjustable means interconnecting said first and second frame sections in a manner to facilitate tilting of said second frame section about its longitudinal axis relative to said first frame section, front and rear axles having ground engaging wheels mounted thereon, suspension means mounting said second frame section on said front and rear axles, said suspension means associated with at least one of said front and rear axles including a pair of axle support arms connected to said one of said axles and pivotally connected to said second frame section, and means cooperative with said axle support arms to maintain said one of said axles in substantially transverse relation to said longitudinal axis when the ground reaction forces acting on the associated wheels are of predetermined magnitude, said last mentioned means being operable to change the angular relation of said one of said axles relative to said longitudinal axis so as to effect steering of said vehicle when the reaction forces acting on said associated wheels are selectively reduced from said predetermined magnitude, said adjustable interconnecting means being operable to tilt said second frame section relative to said first frame section to reduce said reaction forces in a manner to effect steering of said vehicle about an axis located outwardly from the side of said second frame section in the direction of tilt thereof.

4,119,171

SAFETY ANTI-THEFT DEVICE FOR VEHICLES HAVING A DIESEL ENGINE

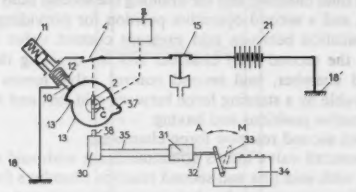
Yves Remontet, Chatou, France, assignor to Societe d'Exploitation des Brevets Neiman SA., Courbevoie, France

Continuation of Ser. No. 552,409, Feb. 24, 1975, abandoned. This application Nov. 23, 1976, Ser. No. 744,371

Int. Cl.[2] B60R *25/04*

U.S. Cl. 180—114 **4 Claims**

1. A safety device for a vehicle having a diesel combustion engine, said device comprising a key operated rotary lock comprising a rotor and a stator, a switch movable with the rotor of the lock, a bolt controlled by the lock and effective alternately to lock and to free a part of the vehicle necessary for its safe operation, said lock being movable sequentially from a first position in which said engine is stopped and said part of the vehicle is locked by said bolt, through an intermediate position in which said engine is stopped and said part of the vehicle is free of said bolt, to a third position in which said engine is running and said part of the vehicle remains free of said bolt; an operating element secured to and movable with said lock and comprising a cam element cooperating with a follower controlling a linkage to apply a controlling movement to remote means effective to allow starting and to stop said engine as said lock moves between said intermediate and third positions, a blocking surface formed on said cam element



and cooperating with stop means movable between an operative position, in a path of movement of said blocking surface, in which said lock is prevented, by inter-engagement of said blocking surface and said stop means from being moved to said first position in which said bolt locks said part of the vehicle and an inoperative position in which said stop means is displaced from said path of movement of said blocking surface and the lock is freed to move to said first position to lock said part of the vehicle, means operable when the engine is running for maintaining said stop means in said operative position and means moving said stop means to said inoperative position when said engine is stopped and said lock is in said intermediate position.

4,119,172

STEERING FORCE CONTROL SYSTEM

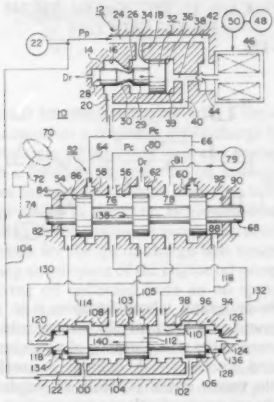
Takayuki Yanagishima, Yokosuka, and Naohiko Inoue, Yokohama, both of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Feb. 15, 1977, Ser. No. 768,827

Claims priority, application Japan, Feb. 17, 1976, 51-15510

Int. Cl.[2] B62D *5/08*

U.S. Cl. 180—141 **12 Claims**



1. A steering force control system for a power steering system of a vehicle, comprising

an input fluid pressure source;

pressure control valve means communicating with said source for regulating an input fluid pressure therefrom to a steering pressure;

second control valve means communicating with said pressure control valve means and with first and second fluid chambers of a power cylinder of the power steering system for controlling communication between said pressure control valve means and each of the first and second fluid chambers and for alternatively draining the first and second fluid chambers, said second control valve means having a first operative position for providing communication between said pressure control valve means and the first fluid chamber and for draining the second fluid chamber, and a second operative position for providing communication between said pressure control valve means and the second fluid chamber and for draining the first fluid chamber, said second control valve means being movable by a steering force between said first and second operative positions and having

first and second reaction force chambers;

third control valve means communicating with said source and with said first and second reaction chambers for controlling communication between said source and each of said first and second reaction chambers and for alternatively draining said first and second reaction chambers, said third control valve means having a third operative position for providing communication between said source and said first reaction chamber and draining said second reaction chamber for imparting to said second control valve means a reaction force opposing a steering force necessary for moving said second control valve means into said first operative position, and a fourth operative position for providing communication between said source and said second reaction chamber and draining said first reaction chamber for imparting to said second control valve means a reaction force opposing a steering force necessary for moving said second control valve means into said second operative position; and

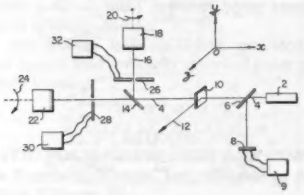
operating means for moving said third control valve means into said third and fourth operative positions when said second control valve means is moved into said first and second operative positions, respectively.

4,119,173

OPTICAL SEISMOGRAPH

Ali Sekhavat, P.O. Box 837, Teheran, Iran, and Ali-Reza Bahrampour, Teheran, Iran, assignors to Ali Sekhavat, Teheran, Iran

Filed Aug. 12, 1977, Ser. No. 824,245
Int. Cl.² G01V *1/18*
U.S. Cl. 181—122 **11 Claims**



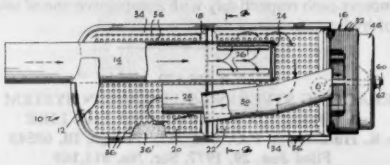
1. Optical seismograph whose function is to measure the relative movement of a beam of electromagnetic waves connected to the extremities of a plurality of pendulums, comprising a collimated source which delivers a parallel beam of electromagnetic waves and a plurality of pendulums whose oscillation paths are perpendicular to one another; means fixed in relation to the electromagnetic wave beam to send the luminous beam onto heavy ends of said pendulums and photoelectric means to measure the position variations of said ends of said pendulums with respect to said electromagnetic wave beam.

4,119,174

ENGINE MUFFLER

Edward Hugo Hoffman, Simi Valley, Calif., assignor to Skyway Recreation Products, Redding, Calif.

Filed May 20, 1977, Ser. No. 799,120
Int. Cl.² F01N *3/06, 1/08, 3/04*
U.S. Cl. 181—231 **4 Claims**



1. An engine exhaust muffler assembly comprising:

a housing forming an enclosed volume and having a dividing wall dividing said volume into first and second chambers;

a first pipe extending through said first chamber, said pipe having a first end for receiving exhaust gases located outside said housing and a second end lying in said second chamber;

a second pipe extending through said dividing wall, with one end in said first chamber and the other end in said second chamber; and

means for coupling said first chamber to a region outside the enclosed volume of said housing:

said second end of said first pipe is closed at its extreme end, and the first pipe portion which lies within said second chamber has at least one side opening in the side of said pipe and a deflector beside said side opening which directs gas exiting from said opening in a direction to spiral about said first pipe.

3. In a muffler assembly which includes a muffler, the improvement of a spark arrester connected to said muffler comprising:

a plurality of plates arranged in a stack with the plates having communicating holes near their centers and having peripheral portions slightly spaced apart; and

means for applying exhaust gases to said communicating holes;

said plates having holes near but spaced from their peripheries, said holes being formed so the regions of said holes are deformed to form protuberances, and the protuberances of each plate lie against the deformed regions surrounding the holes of an adjacent plate, to thereby space the plates and hold them in alignment.

4,119,175

STEP LADDER

John Alfred Herwynen, King City Post Office, King City, Ontario, Canada

Filed Jan. 17, 1975, Ser. No. 541,840
Int. Cl.² E06C *1/24*
U.S. Cl. 182—125 **1 Claim**

1. A foldable step ladder comprising a pair of front legs integrally connected in their upper parts, said front legs being pivotally connected in their upper parts to a corresponding pair of interconnected rear legs, two single step members pivotally connected between said front legs and a pair of rear tension rails pivotally interconnecting the rear of the sides of said steps to form a collapsible parallelogram, an unitary guiding link pivotally attached to each side of the top step intermediate to the ends thereof and to the corresponding inner side of said rear legs at a point below the top step, said top step resting on said guide links in the opened position of the ladder to limit rotation of the steps to a horizontal position and urging said top

step to collapse said parallelogram on rotation of the said rear legs to a folded position, said guide links at said connection point below the top step extending towards the other a suffi-

cient distance to each provide an abutment spaced from the individual leg from which it is pivotal, said top step resting on said abutments in the opened position of said ladder with said rear legs braced together below said lower step.

4,119,176

FALL ARRESTER, FOR BUILDING WORKS

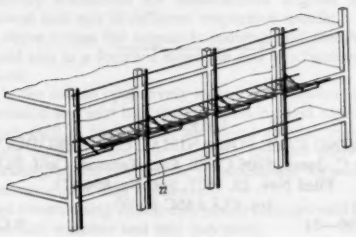
Vicente Mira Verdu, Jose Antonio, 15, Jijona (Alicante), Spain

Filed Sep. 26, 1977, Ser. No. 836,892

Claims priority, application Spain, Sep. 29, 1976, 223512[U]

Int. Cl.[2] E04G *21/32*

U.S. Cl. 182—138 **8 Claims**



1. An improved fall arrester for building works, comprising: a safety net, at least two supporting arm structures for said net, each of said supporting arm structures having first and second struts, the first end of said first strut being pivotally joined to the intermediate portion of said second strut thus forming the shape of a letter "Y," at least one vertical guide channel attached to said building for each of said supporting arm structures, support means for holding the second end of said first strut and a first end of said second strut in said at least one vertical guide channel, said safety net being slung, between the second ends of said second struts, said support means for holding containing means for permitting the longitudinal motion of the ends of the struts attached thereto in said guide channel and means for securing said support means at a predetermined height in said guide channel whereby the supporting arm structures, and safety net, may all be travelled along the length of the vertical guide channels, and, be secured at said height.

4,119,177

COLLAPSIBLE LADDER

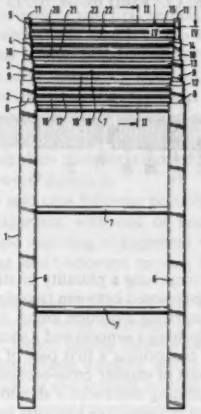
Bengt Heimer Andersson, PL 1722, 310 40 Harplinge, Sweden

Filed Nov. 10, 1977, Ser. No. 850,449

Int. Cl.[2] E06C *1/12, 1/38*

U.S. Cl. 182—195 **9 Claims**

1. A ladder consisting of a plurality of sections including one bottom section and at least one additional section, each of said sections comprising a pair of uprights and at least two rungs the uppermost one of which is fixedly mounted in the uprights, each of said uprights being telescopically slidable into the adjoining lower upright, the uprights of said at least one additional section being provided with longitudinal guideways in which end portions of at least the lowermost one of the rungs of the section are displaceable along said uprights, stop means



defining a lower terminal position for the end portions of said at least one of the rungs in said guideways, and releasable means for holding each of said sections in an extended position with respect to an adjoining section.

4,119,178

INTERNAL COMBUSTION ENGINE WITH DRY SUMP LUBRICATION

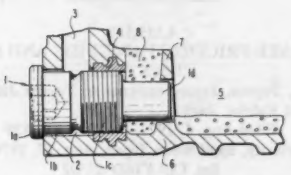
Jürgen Hass, Weinstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Nov. 5, 1976, Ser. No. 739,044

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1975, 2550315

Int. Cl.[2] F16N *33/00*

U.S. Cl. 184—1.5 **1 Claim**

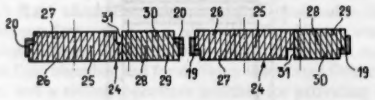


1. An internal combustion engine with a dry-sump lubrication, which comprises a common oil discharge bolt means for emptying a separate oil reservoir tank and an engine oil sump, and in which a line coming from the oil reservoir tank terminates in a bore for receiving the oil discharge bolt means ahead of a thread provided in the bore, as viewed from the outside, the bore leading to the engine oil sump, characterized in that a threaded portion for the oil discharge bolt means is sealed off on a side facing an oil space of the engine oil sump by an oil seal means involving oil collected from an oil spray, the oil discharge bolt means includes an extension following the threaded portion thereof, in that the oil seal means includes an oil pocket means, open in an upward direction and extending below and above the threaded portion, formed between the oil space of the engine oil sump and the threaded portion of the oil discharge bolt means by a baffle wall means, and in that the bore continues through the baffle wall means and the extension of the oil discharge bolt means passes at least partially through said bore inside the baffle wall and seals the same.

4,119,179
BRAKE DISC STRUCTURE

Jean Masclet, Paris, France, assignor to Messier-Hispano, Montrouge, France

Filed Jun. 14, 1977, Ser. No. 806,506
Int. Cl.[2] F16D *69/04, 65/12*
U.S. Cl. 188—73.2 16 Claims

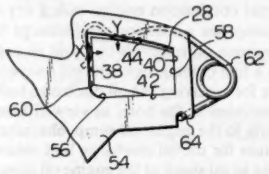


1. A disc brake comprising a plurality of stators and at least one rotating rotor interposed between two stators, said stators and rotors each comprising a friction lining, at least one of the friction linings comprising a support and a shoe engaged in said support, each shoe comprising a first part of larger cross-section and a second part of smaller cross-section extending from the first part and defining therewith a shoulder, two adjacent shoes being disposed in respective supports to face in opposite directions in such supports so that a first part of one shoe is adjacent a second part of another shoe on the same side of the support, the shoes in adjacent supports being geometrically identical, each support having an aperture in which the respective shoe is engaged, each aperture being constituted by a first bore of larger diameter extending partly in the depth of the respective support and a second bore of smaller diameter extending coaxially with the first bore in the remainder of the depth of the respective support and defining a shoulder therewith, said first and second parts of the shoe being respectively received by the first and second bores in the support with the shoulder of the shoe bearing against the shoulder of the support, said first and second parts of the shoe having contours corresponding to the bores in the support and being seated therein with slight clearance to permit heat expansion in operation, each shoe providing a braking surface on opposite sides of its support.

4,119,180
DISC BRAKE FRICTION PAD GUIDE AND SUPPORT STRUCTURE

Koji Horie, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Aug. 4, 1977, Ser. No. 821,629
Claims priority, application Japan, Aug. 27, 1976, 51-101714
Int. Cl.[2] F16D *65/02*
U.S. Cl. 188—73.5 1 Claim

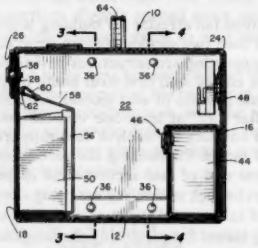


1. A disc brake comprising
a brake disc having an axis of rotation;
an inner pad and an outer pad positioned on opposite sides of said brake disc, respectively;
a torque bearing member slidably supporting said pads and supporting a caliper capable of forcing said pads against said brake disc,
said torque bearing member having an inner pad guide portion for guiding said inner pad along the axis of rotation of said brake disc on one side of said brake disc, a fixed portion opposed to the side of said brake disc, and a pair of outer pad guide portions extending from said fixed portion over the outer peripheral edge of said brake disc to a position beyond the other side of said brake disc;
said outer pad having a pair of through-holes or receiving portions for admitting said outer pad guide portions;
said pair of outer pad guide portions having an outer side surface and a bottom surface extending at a right angle to each other along the axis of rotation of said brake disc;
said pair of through-holes or receiving portions having sliding surfaces for abutting said outer side surface and the bottom surface of said outer pad guide portions;
said pair of outer pad guide portions being substantially of a rectangular transverse cross section defined by its outer side surface and inner side surface, said through-holes in said outer pad for admitting said guide portions being of a rectangular shape similar to the shape of said cross section, and a clearance being provided between the inner side surface of each of said outer pad guide portions and one of the walls defining each of said through-holes provided in said outer pad; and
a pair of coil springs provided between said outer pad and outer pad guide portions for preventing rattling of said outer pad, one end of each said coil spring being hooked by a cut away portion provided in said outer pad, and the other end of each said coil spring being hooked by an edge of said outer pad guide portion, whereby said coil springs urge said outer pad against said outer pad guide portions.

4,119,181
CARRYING CASE FOR ANIMAL CARE PRODUCTS

Constance C. Jones, 5906 Cahill Ave., Tarzana, Calif. 91356

Filed Nov. 23, 1977, Ser. No. 854,471
Int. Cl.[2] A45C *11/00*
U.S. Cl. 190—51 9 Claims



1. A carrying case for animal care products comprising:
a housing having an internal compartment created by the interconnection of a bottom wall, a top wall, a front wall, a back wall and side walls, said bottom wall being fixedly secured to said back wall, said top wall being hingedly connected to said back wall for movement in respect thereto between a closed position and an open position, said front wall being hingedly connected to said bottom wall for movement in respect thereto between a closed position and an open position, with both said top wall and said front wall in their respective closed positions there being manually activatable locking means for securing both said top wall and said front wall to said side walls and latching means for interlocking said top wall and said front wall.

4,119,182

TWO-SPEED BICYCLE HUB WITH COASTER BRAKE AND PEDAL ACTUATED SPEED SHIFT

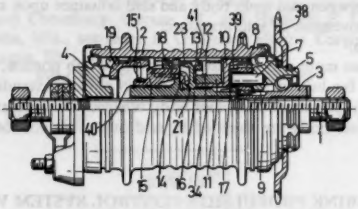
Werner Steuer, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Jul. 27, 1977, Ser. No. 819,325

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1976, 2635850

Int. Cl.² B60K *29/02*

U.S. Cl. 192—6 A **14 Claims**



1. A multiple-speed hub for a driven wheel of a vehicle comprising:

(a) a shaft having an axis;

(b) a hub shell mounted on said shaft for rotation about said axis;

(c) a multiple-speed transmission mounted in said hub shell and including first and second transmission members operatively connected for simultaneous angular movement about said axis at different respective speeds;

(d) drive means for angularly moving said members about said axis in a forward direction and in a backward direction;

(e) brake means operatively interposed between said transmission and said hub shell for braking said rotation of the hub shell in response to backward angular movement of said members and for releasing the hub shell from the braking action in response to subsequent forward angular movement of said members;

(f) an overrunning clutch interposed between said first transmission member and said hub shell;

(g) a pawl member mounted on said second transmission member for joint angular movement;

(h) ratchet means on said hub shell;

(i) a control element mounted in said shell for rotation about said axis,

(1) said control element having an annular cam face directed toward said axis,

(2) said pawl member having a cam follower portion and a ratchet engaging tip portion;

(j) biasing means biasing said pawl member toward a position of engagement of said cam follower portion with said cam face and of said tip portion with said ratchet means,

(1) said cam face having at least one first circumferential section and at least one second circumferential section,

(2) each of said sections having an arcuate, circumferential portion adjacent said axis, a circumferential control portion sloping radially outward from said adjacent portion toward the adjacent portion of the other section in the circumferential direction of forward angular movement of said second transmission member, and an abutment portion transverse to said adjacent and control portions,

(3) the control portion of said first section extending far enough from said axis to permit driving engagement of said tip portion with said ratchet means when said cam follower portions engages said control portion of the first section,

(4) the control portion of said second section when engaged by said cam follower portion preventing engagement of said tip portion when said ratchet means,

(5) said pawl member abuttingly engaging said abutment portion when said second transmission member is moved by said drive means in said forward direction for rotating said control element about said axis,

(6) the circumferential length of the adjacent portion of said first section being approximately two thirds of the combined circumferential length of said adjacent and control portions of said first section, and

(7) the circumferential length of the adjacent portion of said second section being 25 to 50% of the combined circumferential length of said adjacent and control portions of said second section; and

(k) friction means selectively impeding rotary movement of said control element with said pawl member when said second transmission member is moved by said drive means in said backward direction,

(1) whereby said cam follower portion moves from camming engagement with one of said first and second sections into camming engagement with the other section during said backward moving of the transmission members,

(2) the circumferential length of said adjacent portion of the first section being sufficient to permit releasing of said brake means during said forward moving of said second transmission member before said cam follower portion engages said control portion of the first section.

4,119,183

CLUTCH

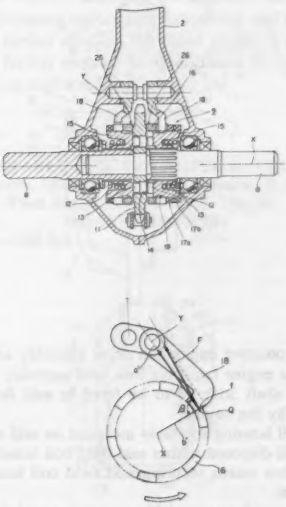
Hisatake Fujioka; Tomeo Umemoto, both of Sakai; Masamitsu Shingaki, Kishiwada, all of Japan; Mikio Yuki, Vichy, France; Mitsuhiro Sato, Sakai, and Shosuke Kawabata, Osaka, both of Japan, assignors to Kubata Ltd., Japan

Filed Oct. 7, 1976, Ser. No. 730,318

Claims priority, application Japan, Apr. 5, 1976, 51/38418

Int. Cl.² F16D *11/06*

U.S. Cl. 192—24 **1 Claim**



1. A clutch comprising a drive rotary member, a driven rotary member engageable with and disengageable from the drive rotary member by being moved relative thereto in the direction of axis of rotation, the driven rotary member being biased toward the drive rotary member for engagement therewith, an annular cam interposed between the drive rotary

member and the driven rotary member and rotatable about the axis of rotation, and an engaging member manually operably mounted on a case to prevent rotation of the cam, the driven member and the cam being formed in facing relation to each other with wave-shaped cam surfaces, the driven rotary member and the cam being rotatable relative to each other to permit the cam surfaces to ride on each other, whereby the driven rotary member is forced away from the drive rotary member, wherein the drive rotary member is formed with a groove to hold the driven rotary member out of engagement with the drive rotary member when the extreme end of the engaging member projects toward the driven rotary member through the cam and is engaged with the groove,

characterized in that when the cam rotates in such state that the engaging member is subjected to tension due to the rotation of the cam, an angle α between a line *a* drawn from a first point of contact between the engaging member and the cam to a support axis of the engaging member, and a line *b* drawn from the first contact point to a rotation axis is determined to be from 90° to 115°, and

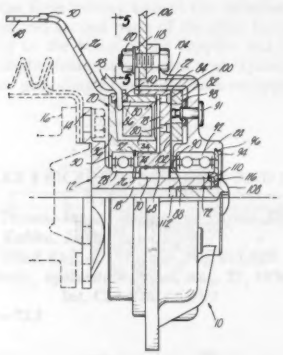
when the cam rotates in such state that the engaging member is subjected to compression due to the rotation of the cam, an angle β between a line *a'* drawn from a second point of contact between the engaging member and the cam to a support axis of the engaging member, and a line *b'* drawn from the second contact point to a rotation axis is determined to be from 65° to 90°.

4,119,184

AUTOMOTIVE FAN DRIVE ASSEMBLY

Michael Lee Mower, Elmira; William Arthur Carleton, Pine City, and Gary Richard Packard, Horseheads, all of N.Y., assignors to Facet Enterprises, Inc., Tulsa, Okla.

Filed May 4, 1977, Ser. No. 793,710
Int. Cl.² F16D *27/10, 43/25*
U.S. Cl. 192—82 T **8 Claims**



1. An automotive engine fan drive assembly adapted to be driven by an engine fan drive hub, said assembly comprising:

a central shaft adapted to be fixed to said fan drive hub driven by the engine;

a field coil housing rotatably mounted on said central shaft;

a field coil disposed within said field coil housing;

anti-rotation means securing said field coil housing against rotation;

circuit means for controlably energizing said field coil;

a magnetically permeable annular inner body drivingly connected to said central shaft, said inner body element axially adjacent to said field coil and having circumferential slots minimizing the magnetic flux from said field passing radially through said inner body;

a magnetizable annular armature axially adjacent said inner body, spaced from said field coil;

a fan hub assembly including a fan hub, and bearing means rotationally mounting said fan hub on said central shaft adjacent to said armature;

means releasably securing said fan hub on said central shaft;

spring connector means connecting said fan hub to said armature, said spring connector means allowing limited axial movement of said armature towards said inner body against the resistance of an axial bias force, said axial movement occurring under the influence of said magnetic flux;

clutch engagement means producing a driving connection between said inner body and said armature upon said axial movement of said armature;

a fan;

means mounting said fan to said outer hub portion;

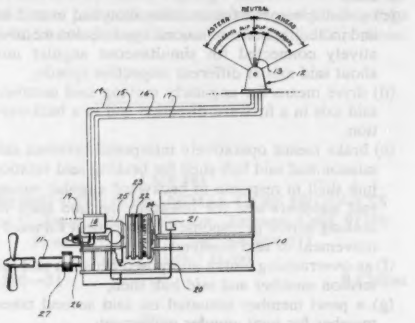
said fan hub including an outer hub portion extending over said armature and inner body whereby said armature and inner body are shielded by said outer hub portions.

4,119,185

MARINE PROPULSION CONTROL SYSTEM WITH MANEUVERING BRAKE

John M. Phinney, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Apr. 4, 1977, Ser. No. 784,165
Int. Cl.² F16D *67/02*
U.S. Cl. 192—.094 **9 Claims**



1. In a pneumatic control system for a marine propulsion drive which includes a prime mover controlled by a throttle speed governor, a drive train for transmitting power from the prime mover to a propeller drive shaft, astern and ahead air inflatable clutches for selectively connecting the prime mover to said drive train, a brake operable on said propeller drive shaft, throttle means for actuation of the propulsion system and including means for producing alternative ahead and astern direction pressure signals indicative of the desired direction of travel and a speed signal whose magnitude is proportional to desired speed, means responsive to said speed signal for controlling the inflation of a selected clutch, and a clutch selector valve responsive to said direction pressure signals for connecting the selected clutch to said inflation control means, the combination therewith of:

means accumulating a pressure signal responsive to said speed signal while said ahead clutch is inflated for ahead direction of travel, said accumulating means discharging said pressure signal at a controlled rate after said ahead clutch has been deflated,

brake control means responsive to said accumulated pressure signal and to said astern direction to engage said brake in response to said astern direction signal and so long as said accumulated pressure signal is above a first preselected level, and

shift delay means responsive to said accumulated pressure signal to block said astern direction signal from acting on said selector valve and said brake control means so long as

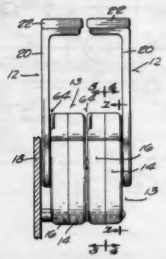
said accumulated pressure is above a second, higher preselected level,

said brake control means being further responsive to the internal pressure within said astern clutch to disengage said brake when said astern clutch has been inflated to a predetermined inflation level.

4,119,186
SINGLE LEVER CONTROL HAVING A THROTTLE WARM-UP LEVER

Hrishikesh Choudhury, Gurnee, Ill., and Heinrich E. Luksch, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 28, 1977, Ser. No. 772,430
Int. Cl.² B60K *41/02*
U.S. Cl. 192—0.096 **22 Claims**

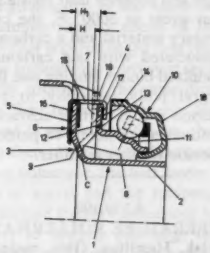


1. A single lever control comprising a housing, a main control lever, means supporting said control lever from said housing for pivotal movement about a first axis from a neutral position, through a shift position, and subsequently through a range of throttle advance positions, a warm-up lever carried by said housing for pivotal movement about a second axis between an idle position and a range of engine warm-up positions, a throttle lever adapted to actuate a remotely located throttle of an engine and carried by said warm-up lever for pivotal movement about a third axis spaced from said second axis, means connecting said control lever and said throttle lever for pivoting said throttle lever about said third axis in response to movement of said control lever from the neutral position to a throttle advance position and for permitting pivotal movement of said throttle lever in response to movement of said warm-up lever from the idle position, a gear shift lever adapted to actuate a remotely located clutch of the engine and carried by said housing for pivotal movement about a fourth axis between a neutral position and a drive position, means connecting said gear shift lever and said control lever for pivoting said gear shift lever from the neutral position to the drive position in response to movement of said control lever from the neutral position to a shift position, a lockout lever pivotally carried by said housing, means connecting said lockout lever and said warm-up lever for locating said lockout lever in a first position when said warm-up lever is in the idle position and for locating said lockout lever in a second position when said warm-up lever is in an engine warm-up position, and means connecting said lockout lever and said gear shift lever for permitting movement of said warm-up lever from the idle position when said control lever is in the neutral position, for preventing movement of said warm-up lever from the idle position when said control lever is displaced from the neutral position, for preventing movement of said gear shift lever from the neutral position when said warm-up lever is in an engine warm-up position, and thereby also preventing movement of said control lever from the neutral position, and for permitting movement of said gear shift lever from the neutral position when said warm-up lever is in the idle position, and thereby also permitting movement of said control lever from the neutral position.

4,119,187
CLUTCH RELEASE DEVICE

Horst Manfred Ernst, Eltingshausen; Armin Olschewski, Schweinfurt; Rainer Schürger, Schwanfeld; Lothar Walter, Schweinfurt; Manfred Brandenstein, Aschfeld, and Erich Burkl, Stammheim, all of Fed. Rep. of Germany, assignors to SKF Industrial Trading & Development Company B.V., Nieuwegein, Netherlands

Filed Dec. 2, 1976, Ser. No. 746,942
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1975, 7539627[U]
Int. Cl.² F16D *23/00, 13/60*
U.S. Cl. 192—98 **14 Claims**

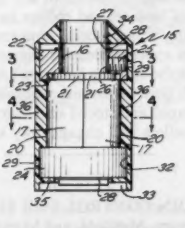


1. In a clutch release device including a sliding sleeve cooperating with a thrust bearing having inner and outer rings, wherein said sleeve is formed from sheet metal and comprises a cylindrical portion with opposite first and second ends, a radially extending flange portion at said first end, said flange portion comprising at least one bearing contact section thereof axially displaced toward said second end of the sleeve and situated adjacent one of said thrust bearing rings for engaging said ring and a further radially extending section axially spaced from said bearing section for engaging a clutch lever; the improvement wherein said flange portion has a shoulder transition section between said cylindrical portion and said bearing contact and further sections, the radial planes of said bearing contact and further sections being displaced in opposite axial directions from said transition section.

4,119,188
SELECTABLE SIZE CENTRIFUGAL CLUTCH

William Argereu, Hickory Dr., North Scituate, R.I. 02857

Filed Jan. 5, 1977, Ser. No. 756,760
Int. Cl.² F16D *43/18*
U.S. Cl. 192—105 BA **3 Claims**



1. The method of providing a centrifugal clutch for varying size bobbin which comprises providing radially expandable weights about a core, providing a plurality of elastic sleeves of different external diameters but each of the same internal diameter to fit over said core and weights, selecting the desired sized bobbin and selecting the desired external size sleeve to fit the selected bobbin and assembling the selected sleeve over said core and weights with the internal diameter of said sleeves

snugly embracing and contracting said weights, and inserting the selected bobbin over the selected sleeve.

4,119,189

REINFORCED CARBON AND GRAPHITE ARTICLES

Leo C. Ehrenreich, Buffalo, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 722,158, Apr. 18, 1968, Pat. No. 3,672,936. This application Jan. 3, 1972, Ser. No. 215,161

Int. Cl.[2] C23C *9/06;* **B44D** *1/46;* **F16D** *13/60*

U.S. Cl. 192—107 M **10 Claims**

1. A high energy absorbing friction article which is a unified structural member for running in air and which is characterized by light weight and superior heat resistance even at opening temperature as great as 3000° F, the combination of a carbonized filamentary material and a carbonized in situ resin binder material associated with said carbonized filamentary material, said carbonized binder binding said filamentary material into an integral body, whereby to provide superior strength in the friction article, further characterized by a friction modifying amount up to about 48 percent by weight of ditungsten monoboride friction modifier.

4,119,190

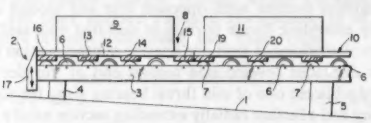
LOW TEMPERATURE ROLLERWAY BRAKE

Edward T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed May 6, 1977, Ser. No. 794,515

Int. Cl.[2] B65G *13/075*

U.S. Cl. 193—35 A **8 Claims**



1. A gravity rollerway conveyor for use at low temperatures to store pallets and deliver them one at a time to the front lower end of the conveyor, comprising: a support; at least two downwardly and forwardly inclined flights of undriven rollers having their upper support surfaces adjacent an inclined support plane and each having a fixed generally horizontal axis of rotation generally perpendicular to its flight; means at the forward end of said rollerway conveyor for stopping and positively holding at a fixed location the forwardmost one of a plurality of loaded pallets serially extending along the conveyor; said flights of rollers having alternating groups of first rollers and second rollers with said first rollers being laterally aligned with each other and said second rollers being laterally aligned with respect to each other as between the flights; all of said first rollers having means forming their load engaging surface that are substantially free of any appreciable compression set, and all of said second rollers having means forming their load engaging surface being constructed of elastomeric material having an appreciable load compression set, at the low temperatures; and the spacing between and positioning of said rollers being such that when said rollerway conveyor is filled with serially arranged and stored stationary pallets, the support surfaces of said pallets will engage only said first rollers.

4,119,191

VARIABLE COIN CONTROL FOR FOOD DISPENSER

William A. Arzberger, Medfield, and Merle S. Brown, Cohasset, both of Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Filed Feb. 7, 1977, Ser. No. 766,430

Int. Cl.[2] G07F *13/00*

U.S. Cl. 194—9 T **19 Claims**

1. Coin-operated control apparatus for a vending machine to control means for dispensing a product from the machine, said control being provided in an alterable manner to operate the means for dispensing on receipt of different total amounts of coinage, comprising;

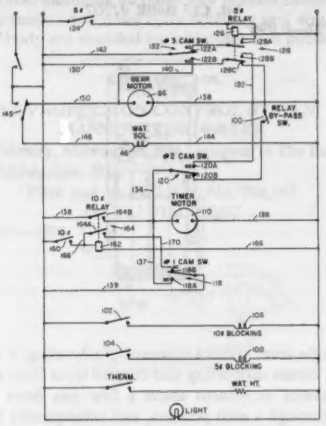
at least a first cam and a second cam and first and second cam switch means associated, respectively, with the first and second cams,

drive means for commonly supporting and simultaneously driving said first and second cams,

first coin register means responsive to receipt of a coin of first denomination,

second coin register means responsive to receipt of a coin of second denomination,

means intercoupling said first coin register means and said first cam switch means to operate said drive means in predetermined positions of the first cam,



means intercoupling said second coin register means and said second cam switch means to operate said drive means in predetermined positions of the second cam,

and means responsive to rotation of the drive means from a start position upon receipt of the proper coin or coins for initiating and maintaining operation of said dispensing means for a predetermined period of time,

said second cam having an adjustable cam track relative to the first cam track, the total coin amount for enabling the dispensing means being selectable at least in part by setting the second cam track to one of at least two different positions.

4,119,192

MULTIPLE COIN MECHANISM FOR NEWSRACK

Paul G. Hickman, Rte. 4, Box 127A, Covington, Ga. 30209

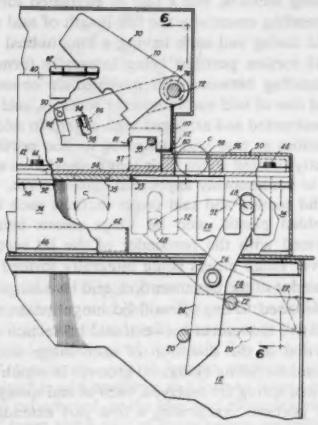
Filed Jan. 3, 1977, Ser. No. 756,198

Int. Cl.[2] G07F *5/06, 17/04*

U.S. Cl. 194—59 **10 Claims**

1. A newsrack having a front access door, a coin mechanism and coin mechanism activating and reset elements on the interior of said door, said coin mechanism comprising support and front-to-back guideway means secured to said newsrack, a coin slide having slots for coins of different denominations to fall therethrough engaged with said support and front-to-back guideway means, a pivoted crank arm on said support and front-to-back guideway means and drivingly connected with the coin slide to shift the coin slide rearwardly toward a coin depositing position and forwardly toward a coin mechanism reset position respectively in response to opening and closing of said front access door, said activating and reset elements on said door disposed rearwardly and forwardly of said pivoted crank arm to turn the same in opposite directions on its pivot, a plurality of gravity biased pawls positioned above the coin slide, a common transverse axis pivot shaft for said pawls

secured to said support and front-to-back guideway means, each pawl having a forward end depending tang in the path of movement of a coin in one slot of said coin slide and also having a notch in its lower edge rearwardly of said tang, a rigid pin element on the coin slide extending transversely of said pawls and engaging said notches lockingly to limit movement of the coin slide rearwardly toward said coin depositing posi-



tion when said tangs are not engaged and elevated by coins of proper diameters moving with the coin slide, said pawls swinging upwardly on said common pivot shaft in response to engagement of the tangs by coins of proper diameters moving rearwardly with the coin slide to clear said notches from engagement with said rigid pin element and allowing the coin slide to travel rearwardly to said coin depositing position.

4,119,193

SHUTTLE TYPE LIVESTOCK FEEDER

Kenneth L. Smith, and Ernest H. Sancken, both of Eureka, Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Oct. 28, 1976, Ser. No. 736,487
Int. Cl.[2] B65G *69/04*
U.S. Cl. 198—371 **2 Claims**

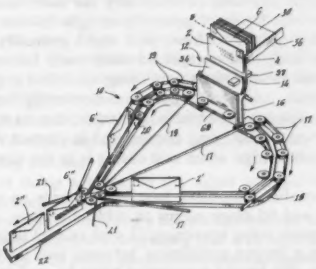
1. In a feeder for discharging feed into one or more feed receiving means of an elongated feeding course, the combination comprising an elongated track extending longitudinally along said course and co-extensive therewith, a carriage mounted for travel along said track, drive means for reciprocatingly moving said carriage on said track, a pair of guide means longitudinally spaced from each other and disposed at opposite ends inside of said carriage, an endless loop conveyor member having an elongated top portion extending between said guides for receiving feed and with said conveyor member extending downwardly around said guides and extending inwardly beneath the said top portion, independent means selectively reciprocating said conveyor member about said guides in the same or opposite direction of movement of the carriage to carry feed for discharge at an end of said top portion into one of said receiving means, and the receiving means being at least one or more corresponding feeders cascaded below the first feeder in which at least the first uppermost feeder and the second feeder located directly below the first feeder are initially moved longitudinally in the same direction with the second feeder running slightly ahead of the first feeder, an endless loop conveyor secured to the first feeder to receive and discharge feed, an endless loop conveyor secured to the second feeder and initially rotating in the same direction as the loop conveyor of the first feeder to receive and discharge feed therefrom received from the first feeder, the second feeder at the end of its run then reversing its direction of travel and the rotation of its loop conveyor, the first feeder thereafter reversing its direction of travel and the reciprocation of its loop conveyor as the second feeder commences to pass from below the first conveyor to thereby discharge feed to the second feeder as the feeders both travel longitudinally in a direction opposite to that of the starting travel of said feeders, and the second feeder then reversing direction to move to starting position with its endless loop conveyor reversing rotation to its initial rotating direction and then the first feeder reversing direction to move to its starting position with its endless loop conveyor reversing direction to rotate in the same direction as the endless loop conveyor of the second feeder.

4,119,194

SYSTEM AND APPARATUS FOR THE ORIENTATION AND BIDIRECTIONAL FEED OF INDICIA BEARING MAIL

Gerald C. Freeman, Darien, and James F. Mahoney, New Canaan, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Continuation of Ser. No. 706,577, Jul. 19, 1976, abandoned. This application Oct. 21, 1977, Ser. No. 844,236
Int. Cl.[2] B65G *47/24*
U.S. Cl. 198—400 **6 Claims**



1. A mail handling apparatus for feeding envelope mail pieces according to the location of postal indicia thereupon comprising:

A. feeding means for individually feeding mail pieces in a downward direction;

B. a chute-like receptacle means located directly below said feeding means for receiving mail pieces fed downwardly from said feeding means, said receptacle means being positionable to at least two positions;

C. a first conveyor means comencing adjacent one end of

said receptacle and aligned with one of said receptacle positions.

D. a second conveyor means comencing adjacent the other end of said receptacle and aligned with said other receptacle position.

E. an indicia detection means located between said feeding means and said receptacle for detecting the location of postage indicia on each mail piece fed thereby and for controlling the positioning of said receptacle means; and

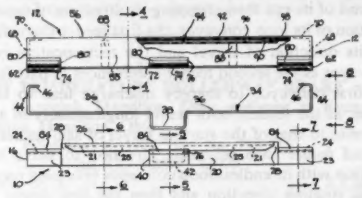
F. ejection means operatively located at each position of said receptacle means for ejecting each mail piece from the receptacle means to one of the aligned conveyor means.

4,119,195

PROTECTIVE CASE

Charles D. Widener, 9 Coach Rd., Rolling Hills, Calif. 90274

Continuation of Ser. No. 579,024, May 19, 1975, abandoned.
This application Apr. 22, 1977, Ser. No. 789,779
Int. Cl.[2] B65D *25/14, 43/16, 81/26, 85/67*
U.S. Cl. 206—204 **7 Claims**



1. In a protective casing for removably retaining an environment-sensitive object,

said casing comprising a base section and a lid section which are hingedly connected together and are movable relative to one another between a closed position and an open position;

said base section being generally rectangular and having side, front, and rear edges, said base section having a generally rectangular bottom wall, a pair of generally upstanding base side walls, a generally upstanding base front wall, and a generally upstanding base rear wall, said upstanding walls each having an upper edge, said upper edges combining to define a generally continuous and rectangular, upwardly-facing, base contact edge;

said lid section being generally rectangular and having side, front, and rear edges, said lid section having a generally rectangular top wall of essentially the same size as said bottom wall, a pair of generally upright lid side walls, a generally upright lid front wall, and a generally upright lid rear wall, said upright lid walls each having lower edge, said lower edges combining to define a generally continuous and rectangular, downwardly-facing lid contact edge of essentially the same size as said base contact edge, and being aligned and in contact with said base contact edge when said casing is in the closed position;

said casing also comprising base hinge means on said base section and lid hinge means on said lid section, said base hinge means being interengaged with said lid hinge means to form a hinged connection between said lid and base sections, said hinged connection being located at the rear edges of said lid and base sections and forming an elongated hinge axis for pivotal movement of said lid section relative to said base section about said hinge axis of said hinge connection to the open position; the improvement comprising, in combination with the foregoing casing structure, a preformed resilient wire torsion spring interengaged with said base section and with said lid section so as to retain said base hinge means interengaged with said lid hinge means, and so as to apply a continuous closing force which urges said lid contact edge and said base contact edge against one another from all open positions of said casing sections, said wire spring being elongated and extending generally the length of said rear edges of said casing sections, said spring having opposite ends disposed at opposed sides of said casing sections, said spring comprising a connector portion at each of its ends connected to one of said casing sections, a connector section intermediate its ends connected to the other of said casing sections, and a pair of elongated torsion portions extending essentially the full length of said rear edges of said casing and each having a longitudinal axis, each of said torsion portions being integrally formed with and extending between said intermediate connector section and one of said end connector sections, said spring being constructed and arranged with regard to said lid and base sections so that said elongated torsion portions are resiliently twisted about their longitudinal axes at all times so as to continuously apply said closing force,

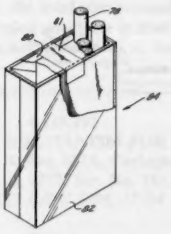
said lid section and said cover sections each being unitary molded plastic, said lid hinge means being integrally formed with the remainder of the lid section and said cover hinge means being integrally formed with the remainder of the cover section, said base hinge means being positioned to engage said lid hinge means so as to limit relative movement between said lid section and said base section in the direction of such hinge axis, said hinge means including elongated grooves in which said portions of said spring are received, each of said spring end connector portions comprising a first part extending generally perpendicular to the torsion portions and a second part at the outer end of said first part, said second part extending generally transversely to said first part and being received in a mating recess in the casing section to which said end connector portion is connected to thereby effect said last mentioned connection.

4,119,196

COLLAPSIBLE PACKAGE

Kenneth A. Flaherty, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed May 2, 1977, Ser. No. 792,739
Int. Cl.[2] B65D *85/10*
U.S. Cl. 206—271 **25 Claims**

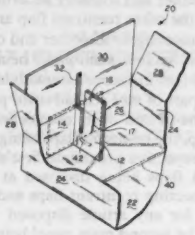


1. A partially collapsible package comprising; a pair of opposing rigid front and rear panels, a bottom panel hinged on opposite edges to the front and rear panels and a pair of side panels hinged to the front and rear panels to form a package closed at the bottom and open at the top to receive and remove articles therethrough, each side panel and bottom panel having a weakened zone to permit collapse of the package in the direction bringing the front and rear panels together, and stop means on the panels and positioned so that as the package is collapsed the stop means will permit limited movement and partial collapse of the package and then will support the package and resist further collapse thereby providing for a partially collapsible supporting package to protect articles contained therein when the package is full and while articles are being removed and the package collapses accordingly.

4,119,197
APPAREL HANGING RECEIVING ELEMENT

William M. Pilz, Eldridge, Iowa, assignor to Container Corporation of America, Chicago, Ill.

Filed Nov. 7, 1977, Ser. No. 849,013
Int. Cl.[2] B65D *85/18*
U.S. Cl. 206—279 1 Claim

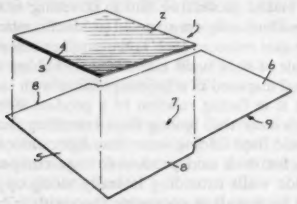


1. In combination, a shipping container having integrally formed bottom, side, top and end walls, a closure flap hinged to an edge of at least one of said walls, a continuous slot formed in an end wall and extending only into said flap hinged to said end wall, and a separate apparel hanger receiving element releasably retained in said container and formed from a cut and scored blank of paperboard, or the like, said element including:
(a) a pair of inner and a pair of outer panels hingedly connected in alternating sequence along parallel hinge lines;
(b) said inner panels being folded against each other into a face-to-face relationship along one of said parallel hinge lines;
(c) each of said inner panels having a top extension hinged to an edge thereof and received through said slot formed in said closure flap of said container;
(d) said extensions being folded into contacting relationship with the exterior surface of said closure flap;
(e) said outer panels being received through said slot in said end wall of said container and folded into contacting relationship with the exterior surface of said end wall;
(f) an opening formed in said inner panels inwardly of said hinge lines connecting said inner panels with their respective adjacent outer panels and being adapted to receive a hook portion of said hanger.

4,119,198
PHONOGRAPH RECORD ALBUM OR SIMILAR ITEM

Rudolph A. Froehlig, College Point, N.Y., assignor to Modern Album and Finishing Co., Inc., Hauppauge, N.Y.

Continuation of Ser. No. 530,090, Dec. 6, 1974, abandoned, which is a continuation of Ser. No. 280,053, Aug. 11, 1972, abandoned. This application Feb. 11, 1976, Ser. No. 657,253
Int. Cl.[2] B65D *85/30*
U.S. Cl. 206—312 1 Claim

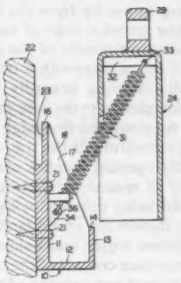


1. A container comprising an inner jacket having a pair of separate superimposed flat panels sealed along the rear and side edges and being open at the front, the rear edge of the panels being sealed to each other by means of integral lips extending from the rear edge of each panel and folded inwardly in superimposed relation to its panel and the lips being superimposed on each other and adhered to each other, a thin flat one piece outer blank having a pair of panels having writing thereon connected together by a fold line wrapped around said inner jecket, the panels of the inner jacket having a substantially greater thickness than the thickness of the outer blank and being devoid of writing, the first panel of the outer blank adhered to a first panel of the jacket, the second panel of the outer blank folded around the fold line along the rear edge of the inner jacket and being adhered to the second panel of the inner jacket, side flaps extending from the first panel of the blank, said flaps being bend over the side edges of the inner jacket and adhered to the said second panel of the inner jacket below the second panel of the blank, the width of said second panel of the outer blank being narrower than the width of the second panel on said inner jacket to form side edges spaced inwardly from the side edge of the inner jacket, a zone adjacent said side edges being adhered to the said bent flaps and the free edges of the outer blank terminating at the open front of the inner jacket.

4,119,199
WEAPON SAFETY RECEPTACLE

Johnny B. Whitaker, Jr., 504 Lawndale La., Montgomery, Ala. 36109

Filed Oct. 3, 1977, Ser. No. 838,577
Int. Cl.[2] B65D *45/22, 85/00*
U.S. Cl. 206—317 8 Claims

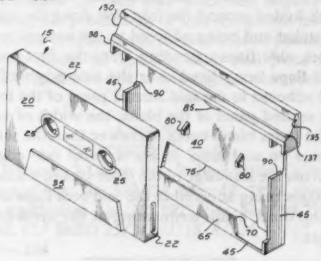


1. A weapon safety receptacle comprising:
(a) a housing section having an upstanding rear wall connected at its lower end to a laterally and forwardly extending bottom wall which is connected at its forward end to an upstanding front wall that terminates at an elevation below the upper end of said rear wall to define an access opening between the upper edge of said front wall and the upper edge of said rear wall,
(b) means carried by the inner side of said upstanding rear wall for retaining at least one weapon in place within said housing section,
(c) there being a recess in the upper rear portion of said upstanding rear wall,
(d) a cover section having a top wall connected to a depending front wall and a depending rear wall with said depending front wall being adapted to extend alongside the outer surface of and terminate below the upper edge of said upstanding front wall and said depending rear wall being adapted to extend into said recess in said upper rear portion of said upstanding rear wall, and
(e) at least one resilient member connecting said cover section to said housing section and urging said cover section toward and into engagement with said housing section so that said cover section remains in position to close said access opening until said cover section is pulled away from said housing section with sufficient force to overcome the force exerted by said resilient member.

4,119,200
TAPE CASSETTE HOLDER

Raymond T. Cassidy, Ashfield, and Robert St. Amand, Springfield, both of Mass., assignors to National Blank Book Company, Inc., Holyoke, Mass.

Filed Oct. 5, 1977, Ser. No. 839,582
Int. Cl.[2] B65D *85/672*
U.S. Cl. 206—387 4 Claims

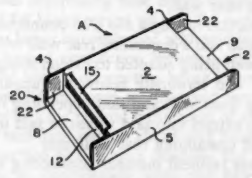


1. A holder for cassettes having tape carrying sprocket reels which is open along its lower edge exposing said tape, the adjacent side walls of the cassette having raised lands adjacent the open edge of the cassette, said holder being of unitary structure and comprising a support beam including an upwardly extending index receiving bar, a base panel depending from said beam and being provided with a pair of laterally spaced posts extending upwardly from the base panel for engaging and holding the sprocket reels of said cassette against rotation, walls extending outwardly of the marginal edges of said base panel and forming therewith a trayshaped frame, a resilient retaining tab extending inwardly from one of said walls in spaced parallel relation to the base panel and including an outwardly flared tip along the free edge thereof, said support beam extending outwardly of the tray-shaped frame and including downwardly opening notches adapted for hanging said holder on a pair of spaced parallel rails within a filing receiptacle, said holder being provided with a cutout of a size and shape to receive therein the raised land on the undersurface of a cassette disposed within said holder, thereby providing a flush surface-to-surface contact of the cassette against the said base panel, and at least one opening adjacent said support beam and spaced from said tab to provide finger access to a cassette within said holder for tilting the same outwardly and thereby deflecting said retaining tab.

4,119,201
CONTAINER INCORPORATING PARTIALLY OPENED PROTECTIVE END CELLS

Frank A. Carlson, Bridgeview, Ill., assignor to Alton Box Board Company, Alton, Ill.

Filed Jan. 14, 1977, Ser. No. 759,388
Int. Cl.[2] B65D *85/54*
U.S. Cl. 206—424 8 Claims

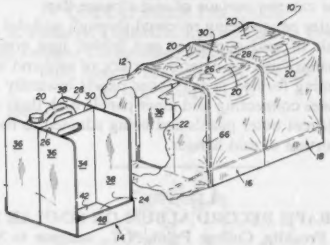


1. A container incorporating partially opened end cells and for use in providing protection for any article enclosed therein, such as a book, comprising, first and second main panels, said second main panel being divided into two parts, side panels connecting to at least one of said main panels, a pair of reentrant flaps, one of each flap connecting to the end of one of said main panels and providing for folded disposition contiguous against the connected main panel, an end flap connecting to each reentrant flap and disposed substantially at a normal to said reentrant flap and thereby providing closure at each end of the formed container, one of said reentrant flap and an end flap being connected together and foldably securing to one end of the first main panel, the other reentrant flap and its connected end flap foldably connecting to the other end of said first main panel, one part of said second main panel being foldably connected to one of said first mentioned connecting reentrant and end flaps, the other part of said second main panel being foldably connected to one of said other connecting reentrant flap and the other end flap, the reentrant flaps being folded contiguously against their respective proximate first and second main panels, the said end flaps being disposed at a normal with respect to their connecting reentrant flaps and providing substantial end closure for any article disposed within the container, said parts of the second main panel being arranged into overlying closure arranged substantially parallel with the said first main panel and thereby providing closure for any article disposed within the formed container, said side panels being folded into a side closing relationship of the container, each side panel having extensions provided at least at one end, and each extension with its connecting side panel having an overall length equivalent to the length of one of said main panels to thereby form a protective and partial end cell at each end of the said formed container.

4,119,202
PACKAGE

Lee J. Roth, c/o Kooltone Inc., 74 Mall Dr., Commack, N.Y. 11725

Filed Oct. 31, 1977, Ser. No. 847,138
Int. Cl.[2] B65D *75/06*
U.S. Cl. 206—432 2 Claims



1. An improved package for assembled products of the type allowing for partial removal from said assembly of some of said products while a packaged condition is effectively maintained for the remainder thereof, said improved package consisting of an outer plastic protective film in covering relation about at least three identically constructed product containers arranged in side-by-side relation, each said container comprising a cooperating pair of back walls interconnected along an upper edge thereof and disposed in adjacent position with each other such that each is in facing relation to a product-storage compartment, each back wall having flaps extending from the bottom thereof, said flaps folding into a tray-like construction forming a bottom for each said product-storage compartment, and a pair of side walls extending laterally along opposite sides of each said back wall to cooperate therewith in bounding each said product-storage compartment, each said side wall being of a vertical size corresponding to the height of said back walls so that said adjacent position of said back walls provides a corresponding adjacent position in each said pair of side walls contributing to the functioning thereof as plastic film-supports oriented laterally of and at spaced locations along said pack-

age, each said side wall having a first locking flap extending from the bottom thereof into said tray-like construction forming said product-storage compartment bottom, whereby the weight of said product placed into said compartment is exerted against each said first locking flap to thereby contribute to maintaining said laterally extending position of said side wall relative to said back wall.

4,119,203

RECLOSABLE HINGED BLISTER CARD PACKAGE

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Sep. 8, 1977, Ser. No. 831,507

Int. Cl.[2] B65D *83/00, 85/14*

U.S. Cl. 206—461 **12 Claims**

1. A reclosable hinged blister card package comprising:

(a) a paperboard card having a front surface and a back surface and an internal edge defining an opening in said card;

(b) a plastic blister having a bottom edge, a raised product holding portion, and a peripheral flange at the sides and bottom of said blister, said peripheral flange being adhered to the front surface of said card;

(c) opening tab means on said plastic blister and extending over at least a portion of said opening in said card and adapted to be pushed through said opening when said blister is reclosed for locking said blister in its reclosed position; and

(d) cut-score lines in the front surface of said card and extending partially through the thickness of said card along the inner and outer edges of said peripheral flange except along the bottom edge of said plastic blister whereby said blister may be lifted by said opening tab means with confined ply separation of the paperboard card at the portions thereof which are adhered to said peripheral flange without breaking the bond between said flange and the front surface of the paperboard card and permitting said plastic blister to be swung open about its bottom edge hinged connection to said card.

4,119,204

RESTRAINING STRUCTURE FOR USE IN CONTAINERS

George E. Peckar, Stamford, Conn., assignor to The Chaspec Manufacturing Co., Stamford, Conn.

Filed Feb. 7, 1977, Ser. No. 766,268

Int. Cl.[2] B65D *81/02*

U.S. Cl. 206—521 **8 Claims**

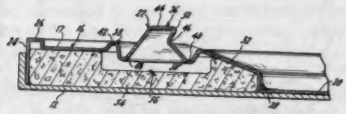
3. A mounting surface for receiving and retaining a body including a gripable edge, said mounting surface comprising:

a seat formed in said surface to receive said body with its edge above said seat; and

a plurality of clamping members formed integral with said surface and spaced around the perimeter of said seat for retaining said body on said seat, each of said clamping members comprising:

a lug having a gripping portion thereon directed generally towards the center of said seat; and

resilient means on said mounting surface for movement of at least a portion of said lug generally perpendicular to said seat in said mounting surface;



each of said clamping members being constructed and arranged so that said gripping portion engages said edge when said body is received on said seat, whereby said body is retained on said seat by said lugs.

4,119,205

PALLETIZED CONTAINERS

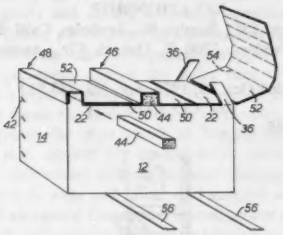
Paul Nigel Delany, Hockley, England, assignor to Delpack Limited, Hockley, England

Filed Jul. 21, 1977, Ser. No. 817,659

Claims priority, application United Kingdom, Jul. 22, 1976, 30567/76; Nov. 2, 1976, 45424/76

Int. Cl.[2] B65D *19/36*

U.S. Cl. 206—598 **9 Claims**



1. A palletized container comprising a case formed from at least one piece of foldable packaging material, the case having two opposed ends each with a bottom flap, two opposed sides each with a bottom flap which is divided to define a foldable tongue at each end of each said flap, said tongues being located outside the bottom flaps of said opposed ends, and a separate pallet secured to the base of the case and comprising two parallel pallet supports defining a channel therebetween to receive the forks of a fork-lift vehicle, each pallet support comprising an elongate member folded over and around an opposed pair of said tongues to define a hollow tube encircling said tongues, and support means within said tubes to maintain their shape.

4,119,206

COMPONENT SEQUENCE VERIFIER

Daniel Wayne Woodman, Jr., Beverly, Mass., and Stanley Robert Vancelette, Manchester, N.H., assignors to USM Corporation, Farmington, Conn.

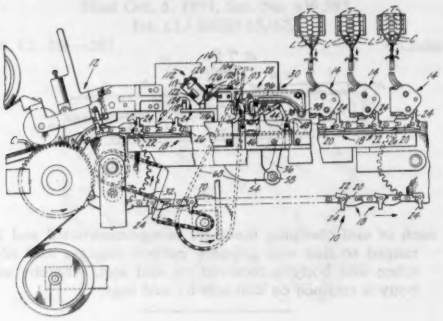
Filed May 13, 1977, Ser. No. 796,680

Int. Cl.[2] B07C *5/08*

U.S. Cl. 209—548 **15 Claims**

1. A machine for successively processing electronic components or the like comprising a continuously movable conveyor for carrying the components in sequential, spaced relation, a stationary component test or processing station adjacent to the operating path of the conveyor, and means for transferring successive components from their respective positions along

the conveyor to present them downstream to the processing station and then restore them to said sequential conveyor positions, respectively, downstream from said station, said transfer means including mechanism for changing velocity of



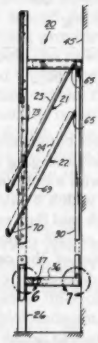
the components, respectively, as they are transferred relative to the conveyor whereby they can be presented individually to said station before being restored to said downstream positions on the conveyor without stopping or retarding its continuous movement during operation of the machine.

4,119,207

MEANS FOR DISPLAYING ARTICLES IN SHINGLED RELATIONSHIP

Robert T. Fuller, 1351 Empire St., Anaheim, Calif. 92804, and Robert J. Sanders, 2200 E. Oskosh Cir., Anaheim, Calif. 92806

Filed Oct. 18, 1976, Ser. No. 733,532
Int. Cl.[2] A47F 5/14
U.S. Cl. 211—45 11 Claims



1. A display device for holding flat articles in shingled relationship comprising:

a pair of suspension uprights, each suspension upright having a plurality of spaced apart holes, holes in each of the said suspension uprights being at the same elevation and facing one another in pairs;

a support upright;

a tie member joining said uprights in a vertical array, said suspension uprights being laterally spaced apart from one another, and said support upright being spaced from both of said suspension uprights and spaced to the rear of them by a given distance from a line drawn between them; and

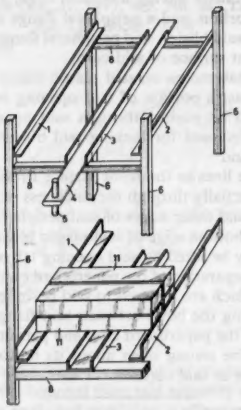
a plurality of rack members each comprising a base member, a hook on said rack member adjacent to the lower edge thereof to restrain an article resting on the rack member from sliding off, and a stiffly flexible cross member, said base member, hook and cross member being joined together to form an integral structure, said cross member being attachable to the suspension uprights by being flexed and its ends inserted into a pair of said holes, one in each of said suspension uprights, each said cross member including a pair of bends, one reverse to the other, at each end permitting the entry of the end of the cross member into a hole in the suspension upright when flexed in one direction, and inhibiting its removal when the cross member is unflexed or is flexed in the opposite direction, the rack member having a width greater than said given distance, whereby at least one of said rack members, when its cross member is attached to the suspension uprights, leans in abutment rearwardly and downwardly against the support upright and being freely pivotable without engagement to the support upright except in said leaning abutment.

4,119,208

ARRANGEMENT FOR THE MOVEMENT OF OBJECTS WITHIN THE DEPOSIT AREA OF SHELVES

Norbert Karl Acker, Falltorweg 5, 6079 Buchschlag, Germany

Filed Apr. 7, 1976, Ser. No. 674,495
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1975, 2516725; Aug. 20, 1975, 2536980; Aug. 20, 1975, 2536998
Int. Cl.[2] A47F 7/00
U.S. Cl. 211—49 D 19 Claims

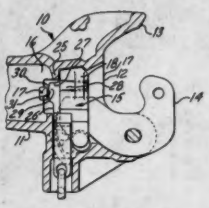


1. Apparatus for moving an object across a storage area, comprising support means for supporting the object extending in a longitudinal direction across the storage area, elongated guide means extending across the storage area in the longitudinal direction, elongated bar means associated with and adapted for movement along the guide means and having its major axis extending along the longitudinal direction for frictionally engaging a portion of the outer surface of the objects, the guide means and bar means being sized, shaped and located so that when the bar means is rotated about its longitudinal axis it will simultaneously engage both the guide means and the object and impart a condition whereby the frictional resistance between the bar means and the object is greater than that between the object and the support means so that when said condition is achieved movement of the bar means in the direction of its longitudinal axis relative to the guide means will operate to move the object.

4,119,209
LOCKING MECHANISM OF A RAILROAD CAR COUPLER

Karl J. Jwuc, Tallmadge, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 23, 1977, Ser. No. 809,181
Int. Cl.[2] B61G 3/06
U.S. Cl. 213—121 **10 Claims**



1. A car coupler, comprising in combination:
(a) a head having a front face, a chamber adjacent the front face, and an abutment and rib disposed in the chamber in spaced relation from the front face, the abutment being farther spaced from the front face than the rib;
(b) a knuckle mounted adjacent the front face of the head for rotation between a closed position and an open position;
(c) a U-shaped lock disposed within the chamber of the head adjacent the rib and spaced from the abutment and movable from a first position, where the lock holds the knuckle in a closed position, to a lockset position where the knuckle is free to rotate from a closed position to an open position; and
(d) a lever movable within the chamber of the head free of the rib and coacting with the lock to move the lock from the first position to the lockset position, the lever having at one end thereof,
(I) a trunion projecting forwardly from the end in the direction of the knuckle for engaging the lock which is eccentrically mounted on the trunion; and
(II) a lug projecting rearwardly from the end in a direction away from the knuckle and in opposed relation to the trunion, the lug being free of the rib and terminating adjacent the abutment and positioned to engage the abutment and limit axial movement of the trunion relative to the lock to prevent disengagement of the trunion from the lock.

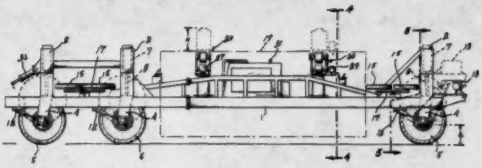
7. A lever movable within a chambered head of a knuckle-type coupler for lifting a U-shaped lock which maintains the knuckle of the coupler in a closed position, said lever having a pair of opposing ends, a trunion projecting from one end of the pair of opposing ends and on which the U-shaped lock is eccentrically mounted, a lug projecting from said one of the pair of opposing ends in opposite relation to the trunion for contacting an adjacent abutment in the chambered head to limit axial movement of the trunion in a direction away from the lock, and a wedging surface disposed intermediate the opposing ends of said lever, the wedging surface designed to engage and tiltably rotate the lock by imparting a positive tilting motion to said lock as it rotates within the chambered coupler head to a lockset position where the knuckle is free to rotate from a closed to an open position.

4,119,210
PIPE LAYING AND TRANSPORTING VEHICLE

Bernard Desourdy, 545 deNormandie St., Longueuil, Canada

Filed Apr. 20, 1977, Ser. No. 789,061
Int. Cl.[2] B66C 23/42
U.S. Cl. 214—1 PA **4 Claims**

1. A pipe laying and transporting vehicle comprising an elongated frame defining a pair of opposite end portions and a central portion intermediate said end portions, first and second roadwheels mounted underneath one end portion for carrying the same and a third roadwheel mounted underneath the other end portion for carrying the same, said roadwheels disposed in a single row centrally and longitudinally of the elongated frame, an elevating device for each roadwheel connected between the same and the respective end portions for selectively elevating and lowering the roadwheels relative to said end portions, a steering system for each of said first, second, and third roadwheels, motor means mounted on the elongated frame and connected to said third roadwheel for producing propulsion of the pipe laying and transporting vehicle, guide wheels connected to each end portion and laterally projecting from each side thereof, said guide wheels outwardly adjustable relative to said frame towards operative engagement with a sidewall to laterally stabilize said vehicle, a pair of carrying devices mounted on said central portion and spaced apart therealong and operatively engaging a pipe section to carry it as it is surrounding said central portion with said opposite end

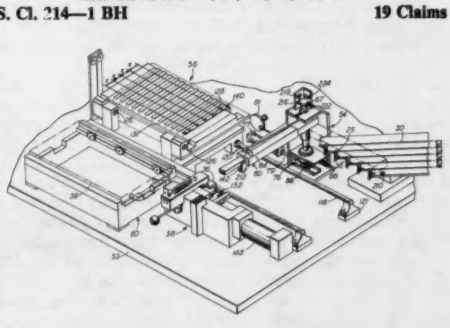


portions of said frame and with said roadwheels being on the outside of the ends of said pipe section, each carrying device including an upright support, rollers carried by the upper end of said support and axially extending longitudinally of said elongated frame, parallel one to another and radially projecting outward from the corresponding support into operative rolling engagement against the inner face of an overlying portion of a pipe section, a drive connected to the rollers to selectively rotate the latter in either of the two angular directions to rotate the pipe about its longitudinal axis, means mounting said support for up-and-down movement and for transverse movement relating to said elongated frame, first power means to raise and lower said support and rollers relative to said elongated frame, and second power means to transversely shift said support and rollers relative to said elongated frame.

4,119,211
METHOD AND APPARATUS FOR TRANSFERRING ARTICLES WHILE RE-ESTABLISHING THEIR ORIENTATION

John A. Boyer; Robert Cross; Ernest Kovacs, and Ralph J. Valentino, all of Allentown, Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 22, 1976, Ser. No. 734,831
Int. Cl.[2] B65G 47/24, 47/30, 47/91
U.S. Cl. 214—1 BH **19 Claims**



2. A method of transferring articles having a first row orien-

tation from first rows having a first spacing to second rows having a second spacing, comprising the steps of:

removing said articles from points located on the first-spaced rows along a line along which the articles have the second row spacing;

re-establishing the first row orientation of the articles with respect to the second rows; and

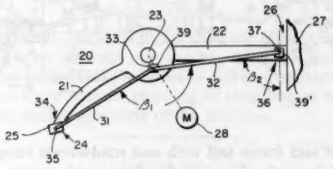
depositing the articles in the second rows having the second spacing to provide new rows of articles with the first row orientation and the second row spacing.

4,119,212

MONITORING THE LOCATION OF A ROBOT HAND

John Peter Wilfred Flemming, Hopewell Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,762
Int. Cl.[2] B65G *47/90*
U.S. Cl. 214—1 CM **8 Claims**



5. A device for handling an article while monitoring the location of the article being handled, the device comprising:

a robot arm terminating at one end thereof in a hand for supporting the article;

first means for mounting an end of the robot arm remote from said hand;

a plurality of linking elements of known lengths;

linking means for so interconnecting said plurality of linking elements as to form an open-ended linkage;

second means for pivotally coupling one end of said linkage to the hand of the robot arm;

third means for pivotally coupling the other end of the linkage to a known position, said second and third means so cooperating that the linkage does not bear any load from the article supported in the hand of the robot arm;

fourth means for measuring the relationship between adjacent, interconnected linking elements; and

fifth means for measuring the attitude of said other end of the linkage at said known position.

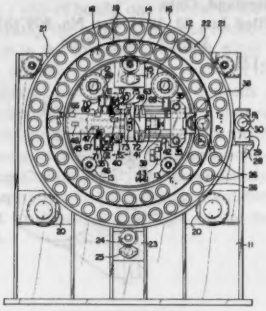
4,119,213

TOOL STORAGE MAGAZINE DEVICES

Mituharu Sato, and Seiji Nakajima, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1977, Ser. No. 837,588
Claims priority, application Japan, Sep. 29, 1976, 51-117008
Int. Cl.[2] B23Q *3/157*
U.S. Cl. 214—1 BB **5 Claims**

1. A tool storage magazine device comprising concentric inner and outer annular magazins, each provided with a plurality of tool pots and a blind pot which are arranged on a circle, magazine driving means for independently rotating said inner and outer annular magazines to bring a tool pot containing a designated tool or said blind pot to predetermined tool pot indexing positions, a tool holding pot disposed on the outside of said outer annular magazine for temporarily holding a tool, said tool holding pot having a center on a line interconnecting the center of said inner and outer annular magazines and the tool pot indexing positions thereof, a saddle located near said center and supported to be movable in a direction perpendicular to the axis of said magazines, a tool transfer arm supported by said saddle to be movable along said line interconnecting said tool pot indexing positions, said tool transfer arm including a gripper for gripping a tool, and means for selectively positioning said gripper to a retracted position inside of said



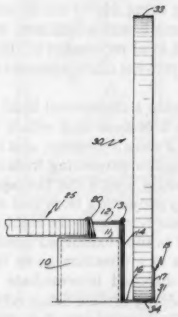
inner magazine, the tool indexing positions of said inner and outer annular magazines and to the position of said tool holding pot.

4,119,214

METHOD AND DEVICE FOR LOADING STOCK INTO A MACHINE

Rolland D. Blom, Providence, R.I., assignor to Electric Terminal Corporation, Warwick, R.I.

Filed Apr. 13, 1977, Ser. No. 787,015
Int. Cl.[2] B65G *7/08*
U.S. Cl. 214—1 BD **7 Claims**



1. In combination with a stock feed pan having a stock receiving surface supported above a floor surface, a device for loading stock comprising

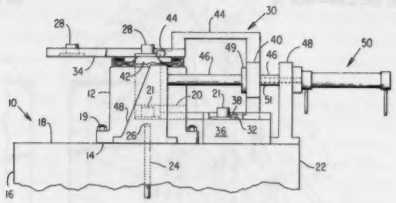
a base supported on said floor and having a top surface with a raised portion at one end, a stock carrier having a substantially U-shaped lower portion normally resting upon the floor which supports said base so that stock for the feed pan can be rolled thereon,

means to pivotally mount said carrier at its upper edge on the raised portion of said base at substantially the level of the upper edge of the stock feed pan lying on the top surface of said base opposite said raised position so that when the carrier is swung to a horizontal position the stock may be slid on said pivotal mount into the feed pan.

4,119,215
AUTOMATIC LOADING-UNLOADING MECHANISM FOR A POT BROACHING MACHINE

James Wellington Dopp, Rochester, Mich., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,791
Int. Cl.[2] B65G *47/82*
U.S. Cl. 214—1 BB 10 Claims



1. A work transfer mechanism for simultaneously loading an unfinished workpiece into a pot broach and unloading a finished workpiece from a pot broach comprising:

a frame member linearly movable with respect to the pot broach;

drive means connected to said frame member to reciprocally move said frame member between a first position away from the pot broach and a second position proximate to the pot broach;

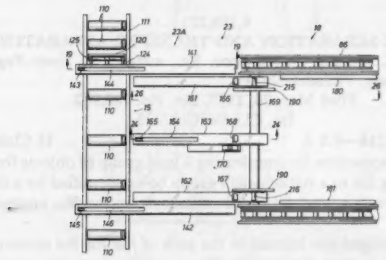
a loading arm connected to said frame member at one end to be movable therewith and to be located proximate to the inlet of the pot broach to allow the unfinished workpiece to move from the inlet of the pot broach into the pot broach; and

an unloading arm connected to said frame member at the end opposite said first end to be movable therewith and located proximate to the outlet of the pot broach to allow the finished workpiece to move away from the outlet of the pot broach simultaneously with the loading arm moving the unfinished workpiece into the pot broach.

4,119,216
SAWMILL STACKER ASSEMBLY MODULE

Roy R. Pryor, and Harold A. Pryor, both of P.O. Box 26, Woodville, Tex. 75979

Filed Dec. 6, 1976, Ser. No. 747,553
Int. Cl.[2] B65G *59/08*
U.S. Cl. 214—6 C 19 Claims



1. In a sawmill and the like including a conveyor means for conducting timbers and other elongate bodies along a path to a preselected location, and a deck assembly adjacent said location for receiving and holding said bodies,

the improvement in combination therewith comprising

stacking means disposed adjacent said location and having arcuately movable arm members extending from said deck assembly to said conveyor means for receiving and laterally supporting said bodies arriving at said location,

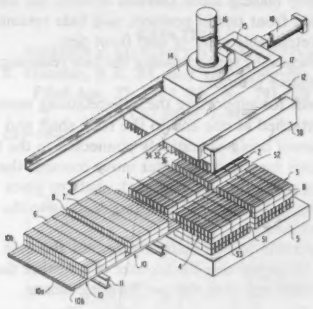
shifting means fixed in a substantially horizontal plane and associated with said stacking means and extending across the path of travel of said conveyor means for shifting said bodies onto said arm members toward said deck assembly, and

driving means for rotating said arm members of said stacking means about an axis adjacent said deck assembly to deposit said bodies onto said deck assembly.

4,119,217
METHOD AND APPARATUS FOR HACKING BRICKS

Robert E. Jones, 15 S. Oak Forest Dr., Asheville, N.C. 28803

Filed Feb. 15, 1977, Ser. No. 768,723
Int. Cl.[2] B65G *57/26*
U.S. Cl. 214—6 A 17 Claims

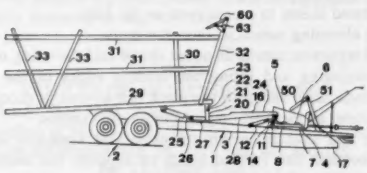


1. In the art of arranging courses of green or raw bricks in a stack for firing in a kiln with each course including a plurality of parallel rows of bricks with predetermined final spacings between each of the rows of bricks; the method comprising the steps of: first arranging a course of bricks including a plurality of generally parallel rows of bricks with first predetermined spacings between the rows of bricks greater than said final predetermined spacings between the rows of bricks, then inserting brick gripping members between the rows of bricks to extend along the opposite sides of the bricks, then moving the rows of bricks towards each other to decrease the spacings therebetween to approximately equal said predetermined final spacings, and then gripping the opposite sides of the bricks with said brick gripping members, and transporting the course of bricks to a stack to be placed in a kiln for firing the bricks.

4,119,218
HILLSIDE BALE WAGON

Jean-Pierre Guenon, Plombieres-lez-Dijon, and Serge J. C. Verdenne, Marcilly, Tille, both of France, assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 29, 1977, Ser. No. 782,578
Claims priority, application United Kingdom, Apr. 1, 1976, 13223/76
Int. Cl.[2] B65G *57/32;* A01D *87/12*
U.S. Cl. 214—6 B 12 Claims



1. An automatic bale wagon for hauling bales lying in a field comprising:

a mobile chassis adapted for movement in a forward direction across the field;

a bale pick-up means mounted on the chassis for picking up bales from the ground during movement of the bale wagon across the field;

means on the chassis for receiving bales picked-up from the ground and for forming a tier of bales thereon;

a load bed on the chassis for forming a stack of bales thereon comprising a plurality of tiers of bales, said tier forming means being movable beween a bale-receiving position and a bale-unloading position in which latter position a bale tier formed on said tier forming means is transferred to the load bed;

bale-retaining means for releasably engaging the upper surface of the top bales of the front tier of bales and applying a positive biasing force thereon toward the load bed to hold said front tier in position, said bale retaining means being retractable clear of said front tier;

resilient means for spring loading the bale retaining means to an operative position;

a rock shaft for supporting the bale-retaining means;

an arm attached at one end to the rock shaft and the other end thereof being operatively connected to the tier forming means for when the latter move towards the load bed rotating said arm and said rock shaft to pivot the bale-retaining means against the spring-loading to the retracted position; and

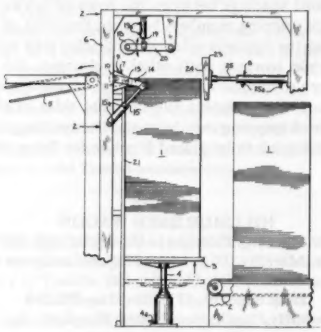
means operable to automatically retract the bale retaining means for permitting the transfer of a further tier of bales to the load bed from the tier forming means.

4,119,219

BATCH FEEDER

Carl R. Marschke, Phillips, Wis., assignor to Marquip, Inc., Phillips, Wis.

Filed Feb. 28, 1977, Ser. No. 772,763
Int. Cl.[2] B65G *59/02*
U.S. Cl. 214—8.5 A **18 Claims**



1. In a batch feeder for first separating a plurality of planular sheets from the top of a stack of horizontally extending vertically superimposed individual sheets and then feeding the separated sheets to a conveyor or the like:

(a) elevating means to raise the stack,

(b) separator means disposed above said elevating means for engaging and lifting the leading edges of the topmost individual sheets in the stack one-by-one in succession to form an inclined batch of individual sheets,

(c) and shifting means to move said separator means to beneath the formed batch to support the leading edge portion of the inclined batch,

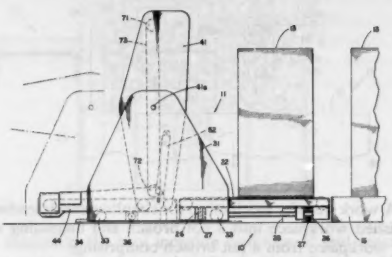
(d) said separator means also forming means to drivingly remove said batch from atop the stack.

4,119,220

SHEET FEEDING APPARATUS

Louis J. Frederick, Fairmount; Kenneth E. Hoke, Marion; Jerrold W. Greene, Marion, and Stephen D. Miller, Marion, all of Ind., assignors to Greene Line Manufacturing Corp., Marion, Ind.

Filed Feb. 24, 1977, Ser. No. 771,456
Int. Cl.[2] B65H *1/22*
U.S. Cl. 214—8.5 A **10 Claims**



10. Apparatus for feeding sheets to a receiving conveyor comprising: support means for centering and supporting the stack in upright position, a cradle for the stack formed by spaced, generally L-shaped members, spaced stanchion members for pivotally supporting said cradle on a horizontal pivotal axis intermediate the ends of one set of the legs of the L-shaped members, the other set of legs carrying conveying means therebetween, means for pivoting the cradle about said axis between a load position in which said conveying means and said other set of legs are horizontal and receive the stack moving horizontally from said supporting means, the stack entering between said one set of legs positioned vertically, and a feed position in which said one set of legs is horizontal, and load support bars moved laterally into the space between said one set of legs of said cradle prior to pivotal movement of the cradle toward said feed position.

4,119,221

PACK SEPARATION AND TRANSFER APPARATUS

James E. Hazard, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Mar. 24, 1977, Ser. No. 780,982
Int. Cl.[2] B65G *47/26*
U.S. Cl. 214—8.5 A **11 Claims**

1. An apparatus for transferring a lead group of objects from a moving file to a station, each group being identified by a flag that projects a predetermined distance from the file, comprising:

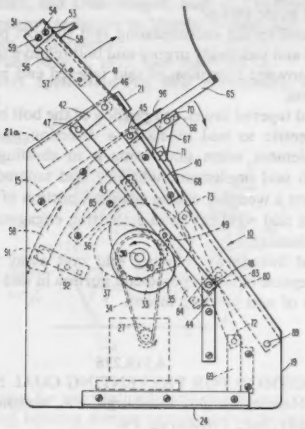
(a) a hinged pan located in the path of the file for receiving objects from the moving file;

(b) flag detecting means for generating a signal when a flag has reached a predetermined point, said signal indicating that a group of objects is on the pan;

(c) a pan rotation mechanism operatively connected to the pan, responsive to the flag detection signal, for rotating the pan and the group of objects contained therein, out of the path of the moving file and adjacent to the station;

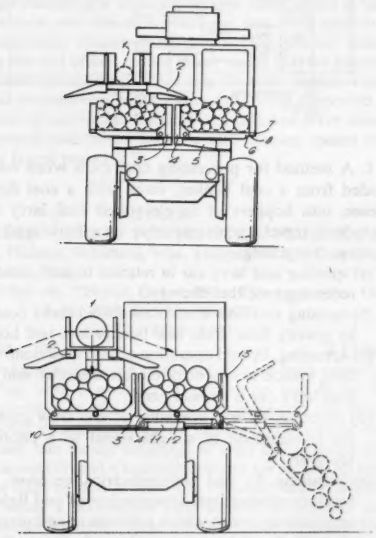
(d) a flag separation mechanism, also responsive to the flag detection signal and adapted to move in synchronism with the rotating pan, for separating the flag from the moving

file and for causing the flag to travel with the group of objects in the rotating pan; and



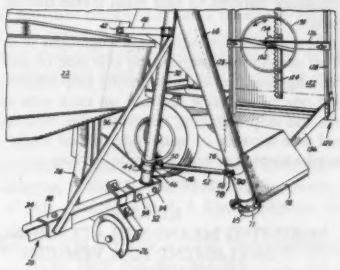
(e) a transfer mechanism operable when the pan is adjacent to the station for transferring the group of objects from the pan to the station.

4,119,222
TREE HARVESTING APPARATUS
Matti Kaarnametsa, Tampere, Finland, assignor to Rauma-Repola Oy, Finland
Filed Jan. 5, 1976, Ser. No. 646,578
Claims priority, application Finland, Jan. 16, 1975, 750108
Int. Cl.[2] B60P *1/00*
U.S. Cl. 214—83.24 **3 Claims**



1. A tree harvesting apparatus comprising:
(a) a chassis;
(b) wheels on both sides of the chassis forming a mobile vehicle with said chassis;
(c) a tree collecting pocket movably mounted over said chassis on each side thereof, said pockets being limited to movement in a substantially horizontal plane;
(d) separate lever means pivotably connected at one end thereof to each of said pockets;
(e) vertical pivot means on said chassis for pivotably mounting the other end of said lever means to the chassis, thereby rendering each of said lever means and the pocket thereon rotatable about said vertical pivot means in a substantially horizontally disposed arc, each of said lever means being of sufficient length to extend the pockets mounted thereon to positions outside the profile of the tree harvesting apparatus; and
(f) means for emptying the extended pocket whereby trees contained in said extended pocket will drop to the ground along the side of the tree harvesting apparatus.

4,119,223
VEHICLE MOUNTED CONVEYOR
Richard E. Fiechter, R.R. #1, Box 102, Craigville, Ind. 46731
Filed Apr. 27, 1977, Ser. No. 791,510
Int. Cl.[2] B60P *1/40*
U.S. Cl. 214—83.26 **3 Claims**



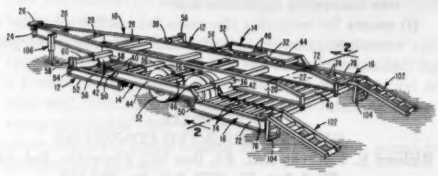
1. Apparatus for particle conveyance comprising:
a vehicle for ground transportation having a vehicle frame;
a container being mounted in said vehicle;
a substantially upright post being rigidly mounted at its lower end to said vehicle; means for rigidly bracing said post at an intermediate portion to said frame;
an elongated supporting strut mounted at one end in swivelled relation to said post and being mounted for pivotal movement about a first axis transverse to the axis of said post;
an elongated tubular member mounted in swivelled relation to said post above said strut mounting and mounted for pivotal movement about a second axis transverse to the axis of said post;
said strut having a strut rod telescoped into said strut and extensible from said strut;
said member being connected to said strut rod for pivotal movement about a third axis substantially parallel to said first axis;
a vehicle tow bar rigidly mounted to and extending forwardly from said frame; and
means for supporting said member in a stored position being rigidly mounted to said tow bar.

4,119,224
VEHICLE OF ADJUSTABLE WIDTH
David Moody, Box 4308, Waco, Tex. 76705
Continuation of Ser. No. 657,586, Feb. 12, 1976, abandoned.
This application Sep. 28, 1977, Ser. No. 837,185
Int. Cl.[2] B60P *3/06*
U.S. Cl. 214—85 **18 Claims**

1. In a vehicle for transporting wheeled machines and the like, the improvement comprising:

a main frame disposed about a longitudinal axis with at least one vehicle supporting wheel rotataby mounted at each side of said main frame, said wheels having a fixed spacing relative to the frame axis to provide a vehicle width within the width allowed for vehicles on public highways,

a plurality of side sections, at least two of said side sections being disposed on each side of said frame axis and each side section having support means for receiving and supporting the wheels of the wheeled machine while being transported, loaded or unloaded,



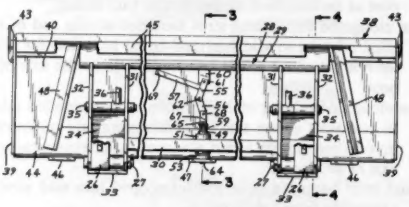
means on said main frame supporting each of said side sections for movement substantially laterally between a retracted position and an extended position with the sections remaining parallel to said main frame during said movement,

alignment means for facilitating alignment in said positions of all of said side sections on one side of said frame axis, said alignment means comprising stop means carried by a first one of said side sections on each side of said frame axis and stop engaging means carried by a second one of said side sections on each side of said frame axis and located adjacent to said first side section.

4,119,225
MOUNTING MEANS FOR ATTACHING AN IMPLEMENT TO A VEHICLE

Jon A. Macht, and David L. Blinne, both of Owatonna, Minn., assignors to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed Apr. 18, 1977, Ser. No. 788,127
Int. Cl.[2] E02F *3/81*
U.S. Cl. 214—145 A **2 Claims**



1. Mounting means for attaching an implement to a vehicle, said mounting means comprising:

(a) a generally horizontally elongated and generally downwardly opening channel member on said implement;

(b) means on said implement defining a recess generally downwardly spaced from said channel and having a generally vertical axis;

(c) a frame mounted on said vehicle for upward and downward movements relative to said vehicle and including a horizontally elongated rigid frame member disposed to be seated in said channel member, and a rigid bar in downwardly spaced parallel relation to said frame member for abutting engagement with said implement above said recess defining means, responsive to movement of said frame toward said implement and upward movement of said frame relative to said implement;

(d) a cylindrical locking bolt having a tapered lower end portion and an axial opening therethrough;

(e) guide means on said frame for said bolt;

(f) a support pin extending axially slidably through said axial opening and mounting said bolt for axial movements in said guide means;

(g) a coil spring encompassing said support pin above said bolt and yieldingly urging said bolt relative to said support pin toward reception of said tapered end portion in said recess;

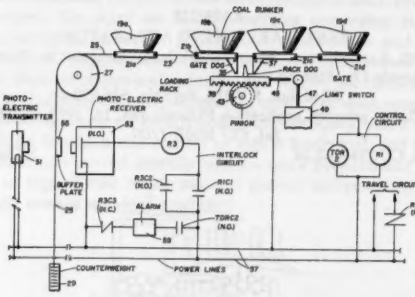
(h) said tapered lower end portion of the bolt being disposed eccentric to said recess in a direction away from said implement when said frame is in abutting engagement with said implement, whereby said tapered end portion exerts a wedging action against a portion of said recess to hold said rigid bar in said abutting engagement with said implement;

(i) and linkage for moving said bolt away from locking reception of said tapered end portion in said recess against bias of said yielding means.

4,119,226
METHOD FOR PREVENTING COAL SPILLS

Robert Harding Bright, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 742,585, Nov. 17, 1976, abandoned.
This application Nov. 29, 1977, Ser. No. 855,586
Int. Cl.[2] B65G *67/06*
U.S. Cl. 214—152 **4 Claims**



1. A method for preventing coal spills when coal is being loaded from a coal bunker, fitted with a coal flow control means, into hoppers of an electrified coal larry car which includes a travel circuit operative on a horizontal coke oven battery, comprising:

(a) spotting said larry car in relation to said coal bunker for receiving coal therefrom;

(b) opening said flow control means whereby coal is loaded, by gravity flow, from said bunker into said hoppers;

(c) actuating, by said operation of said flow control means, a limit switch in a control circuit whereby said electrified coal larry car is de-energized;

(d) effecting, by said operation of said flow control means, the transmission of a light signal to a photo-electrical receiver;

(e) actuating, by said photo-electrical receiver, when said receiver receives said transmission of said light signal, of an interlock circuit which prevents re-energization of said electrified coal larry car, said interlock circuit which can only be de-actuated by the closing of said flow control means; and

(f) closing said flow control means when said hoppers are fully loaded, said closing which substantially concurrently de-actuates said interlock circuit and de-actuates said limit switch thereby re-energizing said electrified coal larry car.

4,119,227

AUTOMATIC, CONTINUOUSLY OPERABLE BAG OPENING APPARATUS

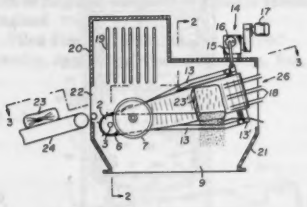
Hermann Hafner, and Otto Steiper, both of Ortenberg, Fed. Rep. of Germany, assignors to Martin Wendel KG, Buedingen, Fed. Rep. of Germany

Filed Mar. 9, 1977, Ser. No. 775,873

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611591

Int. Cl.[2] B65G *65/04*

U.S. Cl. 214—305 **7 Claims**



1. An apparatus for automatically and continuously opening bags comprising housing means, conveyor belt means including two conveyor belts arranged alongside each other with a gap therebetween, upstream roller means arranged substantially horizontally for supporting the upstream end of said conveyor belts, downstream roller means arranged at an angle to the horizontal for supporting the downstream ends of said belts, whereby the upper runs of the belts form a channel with converging side walls, knife means arranged in said gap upstream of said channel, whereby bags travelling on said conveyor belts over the knife means are cut open and turned with their still closed ends up to empty through said gap, wherein said downstream roller means (**10**, **12**) have rotational axes (**10'**) extending in parallel to each other, said upstream roller means (**2**) having a common rotational axis (**3**) supported in said housing means, said parallel axes (**10'**) of said upstream roller means extending at right angles to a plane which in turn extends through said common rotational axis, said apparatus further comprising rocker frame means (**13**), journal means supporting one end of said rocker frame means (**13**) for journalling about said common rotational axis (**3**), said rotational axes (**10'**) of said downstream roller means (**12**) being supported in the other end of said rocker frame means (**13**), and drive means (**14**) operatively interposed between said housing means and said rocker frame means (**13**).

4,119,228

HYDRAULIC CIRCUIT FOR HOISTING FLUID RAM

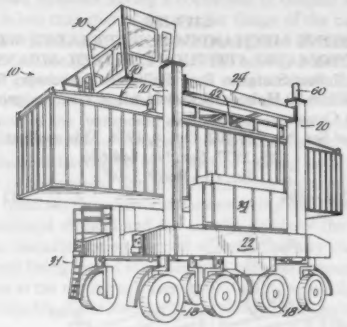
William K. Holmes, Schofield, Wis., assignor to J. I. Case Company, Racine, Wis.

Division of Ser. No. 729,402, Oct. 4, 1976. This application Oct. 25, 1977, Ser. No. 844,620

Int. Cl.[2] B60P *3/00*

U.S. Cl. 214—394 **4 Claims**

1. In a vehicle including a frame defining an open container receiving bay with a spreader supported on said frame for vertical movement in said bay; fluid ram means on said frame and connected to said spreader for raising and lowering said spreader; said ram means including at least one cylinder and piston rod assembly; and a hydraulic circuit for supplying fluid to opposite ends of said at least one cylinder, said hydraulic circuit including a pressurized fluid source, a reservoir, and first and second conduits respectively between opposite ends of said at least one cylinder and said source and said reservoir with valve means in said conduits , said valve means having a neutral and first and second operating positions for connecting the source and reservoir to either of said first and second conduits; pressure responsive valve means in one of said conduits normally preventing flow therethrough, said pressure responsive valve means being connected to the other of said conduits to open in response to pressurized fluid in said other conduit, and alternate means for lowering of the spreader when the valve means is in a neutral position, said alternate means including a normally closed bypass valve means between the end of said at least one cylinder having said one conduit connected thereto and said pressure responsive valve



means, said normally closed valve means being operable to connect said pressure responsive valve means to said end of said at least one cylinder having said one conduit connected thereto so that said pressure responsive valve is opened in response to pressurized fluid in said end of said at least one cylinder.

4,119,229

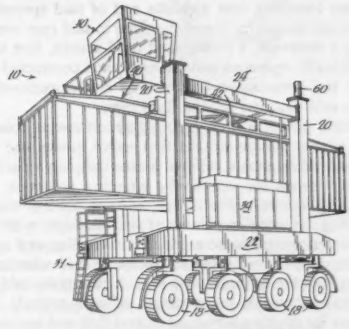
STRADDLE CARRIERS FOR CONTAINERS

William K. Holmes, Schofield, and Philip R. Pueschner, Wausau, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Division of Ser. No. 729,402, Oct. 4, 1976. This application Oct. 25, 1977, Ser. No. 844,655

Int. Cl.[2] B60P *3/00*

U.S. Cl. 214—394 **11 Claims**



1. A vehicle having an inverted U-shaped frame defining an elongated container carrying bay between first and second legs with each leg of said U-shaped vehicle having a plurality of ground engaging wheels, first and second engines respectively supported on respective legs of said vehicles; first drive means between said first engine and at least one wheel on said first leg; second drive means between said second engine and at least one wheel on said second leg; first and second pairs of pumps respectively driven by said first and second engines; a hydraulic power steering system for turning said wheels with one of said first pair of pumps supplying fluid thereto; a spreader; hoisting fluid ram means supporting said spreader for vertical movement in said bay with at least one of said pumps supplying fluid; a plurality of fluid rams on said spreader for

performing a plurality of control functions to connect a container thereto with one of said second pair of pumps supplying fluid thereto; and interconnection means for selectively connecting both said power steering system and said plurality of fluid rams to one pump when one engine fails.

4,119,230

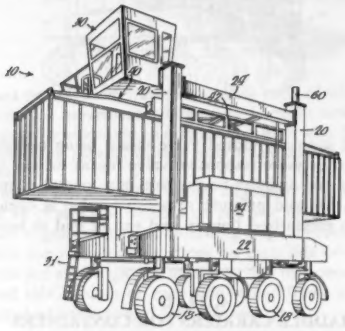
HOISTING MECHANISM FOR SPREADER WITH AUTOMATIC ATTITUDE CONTROL MEANS

Lynn L. Keller, Sturgeon Bay; Philip R. Pueschner, Wausau, and William K. Holmes, Schofield, all of Wis., assignors to J. I. Case Company, Racine, Wis.

Division of Ser. No. 729,402, Oct. 4, 1976. This application Oct. 25, 1977, Ser. No. 844,656

Int. Cl.[2] B60P *3/00*

U.S. Cl. 214—394 **12 Claims**



1. In a vehicle including a frame defining an open container receiving bay with a spreader supported on said frame for vertical movement, first fluid ram means on said frame and connected to one end of said spreader for raising and lowering said one end of said spreader, second fluid ram means on said frame and connected to an opposite end of said spreader for raising and lowering said opposite end of said spreader, hydraulic circuit means for supplying fluid to said ram means and including a reservoir, a pressurized fluid source, first and second electrically operated valve means each connected to said reservoir and pressurized fluid source and respectively connected to said first and second fluid rams,

an electric power source, electric circuit means connecting said power source to said first valve means and to said second valve means, control means forming a part of said circuit means for selectively effecting actuation of said first and second valve means, attitude control means for limiting the angular attitude of said spreader with respect to a reference plane, to a selected maximum, and operated in response to said spreader assuming said selected maximum angular attitude, and switch means in said circuit means responsive to operation of said attitude control means for limiting actuation of said first and second valve means for only reducing the angular attitude of said spreader from said maximum angular attitude.

4,119,231

INSERTS FOR AN INSULATED CONTAINER

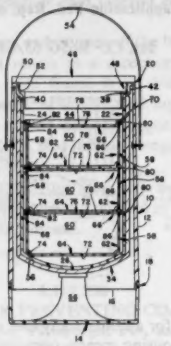
Thelma W. Johnson, R.R. 2, Box 53, 5108 Mount Pleasant South St., Greenwood, Ind. 46142

Filed Aug. 10, 1977, Ser. No. 823,516

Int. Cl.[2] B65D *21/02*

U.S. Cl. 215—6 **9 Claims**

1. In combination, a container having a generally cylindrical inside wall defining an insulated space, a cover for closing the space, a cylindrical insulating liner inside said container and a plurality of stackable inserts sized to fit within the lines, each insert including a dish-like receptacle having a closed end and an open end, the open end including a perimetral lip, and a lid for closing the open end of each receptacle, each lid including a portion for supporting a portion of the closed end of the next superjacent receptacle in a stack of such receptacles, and a sealing rim extending perimetrally about the support portion and adapted sealingly to receive the lip of a respective receptacle, the closed end of each receptacle including a generally flat central portion and a perimetral, downwardly and outwardly opening groove and the support portion of each lid including a generally flat recessed central portion for receiving the central portion of the closed end of the next superjacent receptacle, the groove being sized to receive the sealing rim of the next subjacent lid.



4,119,232

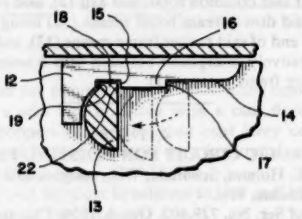
DUAL LATCHING, CHILD-RESISTANT CONTAINER

Theodore Wayne Thornton, 2036 Laird Dr., Salt Lake City, Utah 84108

Filed Dec. 13, 1977, Ser. No. 860,178

Int. Cl.[2] B65D *55/02, 85/56*

U.S. Cl. 215—222 **3 Claims**



1. In a child-resistant container of the dual-latching type that comprises a receptacle having an open mounth and a cover therefor, sets of locking projections rimming the cover and said open mouth of the receptacle, respectively, and spring means for normally urging cover and receptacle apart, the projections of one of said sets being of hook formation and the projections of the other of said sets being of keeper lug formation for engaging and latching with said projections of hook formation, and the said projections of hook formation each having an easily disengaged retention bed in advance of the hook thereof, which can be selectively engaged by a keeper lug during closing of the receptacle, the improvement wherein each projection of hook formation has an elongate, positive stop member extending between said bed and said hook, and each keeper lug has a corresponding and coacting, positive stop member at its top, the bed end of the stop member of the hook formation defining a positive stop for said keeper lug to prevent inadvertent turning of the cover beyond a first, easily disengaged latching condition into a second, child-resistant

condition, and the hook end thereof defining the hook as a positive stop for said keeper lug to prevent release of the cover by mere turning thereof, there being required a combination of positive downward pressure on, followed by turning of, the cover for both placing the cover into and releasing the cover from child-resistant condition.

4,119,233

CLOSURE CAPS

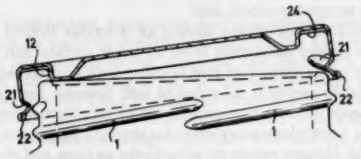
Cyril Kenneth Edwards, Oadby, and Edward Harry Webb, Rugby, both of England, assignors to Thomas Hunter Limited, Rugby, England

Filed Feb. 15, 1977, Ser. No. 768,767

Claims priority, application United Kingdom, Feb. 18, 1976, 6444/76

Int. Cl.[2] B65D *41/04*

U.S. Cl. 215—337 **12 Claims**



1. In the combination of a bottle, jar or the like having a neck with external threads, and a closure cap having a top and a depending skirt provided with preformed lugs or threads threadedly engaged with the said external threads on the neck so that an area of the top is engaged with the upper surface of the neck: the improvement that the top of the cap is provided, inwardly of the area engaged with the upper surface of the neck with a formation extending from the top in the same direction as the skirt to define a gap between the end of each lug or thread on the skirt and the nearest point of the formation, the said gap being sufficiently large for the formation to be able to enter the neck by pivoting about the lug or thread on the skirt when the lug or thread on the skirt is resting on the external thread on the neck but is insufficiently large to allow the formation to enter the neck whilst any of the lugs or threads on the skirt are firmly engaged beneath a thread on the neck.

4,119,234

VACUUM-TIGHT WINDOWS FOR PASSAGE OF X-RAYS OR SIMILAR PENETRATING RADIATION

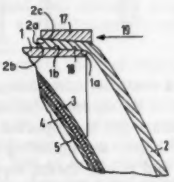
Otto Kotschak, Erlangen-Buckenhof, and Richard Frank, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 23, 1976, Ser. No. 669,725

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1975, 2513894

Int. Cl.[2] H01J *35/18*

U.S. Cl. 220—2.1 R **9 Claims**



1. A vacuum-tight window construction for the passage of x-ray and similar penetrating radiation, said construction comprising an annular frame having a tubular edge portion, a cap-shaped window transparent to penetrating radiation having an annular flange with radially inner and outer surfaces, and a ring, said ring, said annular flange and tubular edge portion being juxtaposed with one another and press-fit together to form an integral assembly, the outermost of the juxtaposed elements having a coefficient of thermal expansion which is less than that of the annular flange of the cap-shaped window which forms the middle juxtaposed element, the innermost of the juxtaposed elements having a coefficient of thermal expansion which is at least equal to that of the outermost element but less that that of the middle element, the innermost of the juxtaposed elements having an outer surface mating with the inner surface of the annular flange, the outermost element having an inner surface mating with the outer surface of the annular flange and encircling the annular flange of said window, the innermost element being encircled by both the outermost element and the annular flange of the window, and the elements being formed with sufficiently close tolerances and being forced together with sufficient pressure therebetween at the mating surfaces thereof to provide a tight press-fit relationship in the absence of any additional securing means.

4,119,235

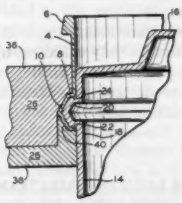
PLASTIC DRUM WITH METAL HANDLING RING

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 25, 1977, Ser. No. 800,501

Int. Cl.[2] B65D *7/42*

U.S. Cl. 220—71 **1 Claim**



1. In combination, a plastic drum and a carrier ring attached to the top portion of said drum, comprising (1) a plastic drum having a generally vertical sidewall and having a substantially circular cross-section in a plane normal to its vertical axis, wherein said sidewall near its top has an outwardly radially extending annular projection having a substantially horizontal circumferential annular downwardly facing first ledge adjacent said sidewall and having a substantially horizontal circumferential annular upwardly facing second ledge adjacent said sidewall and (2) a metal carrier ring having a circular cross-section in a plane normal to its vertical axis and having an upper substantially cylindrical portion (i) having an open top which is at the same or a higher lever than the top of said drum, (ii) having a radially outwardly thickened top portion adapted to be grasped by steel drum chime handling devices and (iii) terminating at its base in an outwardly radially extending, substantially horizontal annular ring portion seated on said second ledge, which annular ring portion terminates in a downwardly and outwardly flaring frusto-conical section that in turn terminates in an inwardly crimped circumferential skirt portion that tightly grips said first ledge from below and exerts an upward force thereon.

4,119,236

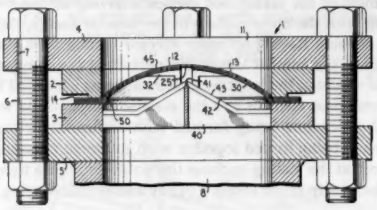
LOW PRESSURE RUPTURE DEVICE

Kenneth R. Shaw, and Franklin A. Hansen, both of Riverside, Mo., assignors to Continental Disc Corporation, Kansas City, Mo.

Continuation-in-part of Ser. No. 712,931, Aug. 9, 1976, Pat. No. 4,079,854. This application Jan. 13, 1977, Ser. No. 759,002 The portion of the term of this patent subsequent to Mar. 21, 1995, has been disclaimed.

Int. Cl.[2] F16K *17/40*

U.S. Cl. 220—89 A **19 Claims**



1. A safety pressure relief assembly of the rupture disc type for mounting between inlet and outlet supporting members and adapted to block flow therepast to a predetermined differential pressure, said assembly comprising:

(a) a relief disc having a concave-convex portion;

(b) a disc support member having stay structure projecting into close proximity with the concave side of said disc concave-convex portion;

(c) a cutting member having a cutting blade edge positioned in axially spaced relation from the concave side of said disc concave-convex portion and stay structure, said blade edge operably extending a substantial part of the transverse distance across said disc concave-convex portion and being offset from said stay structure whereby said disc concave-convex portion is exposed to said blade edge along a substantial extent thereof for cutting therethrough upon deflection of said disc concave-convex portion thereagainst, and

(d) said stay structure being finger-like and having a resistance to deflection only sufficient to retain said disc concave-convex portion out of cutting contact with said blade edge up to a predetermined differential pressure applied to the convex side of said disc.

4,119,237

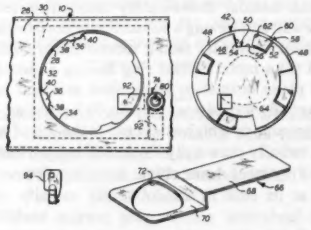
ACCESS DOOR LOCKING MECHANISM FOR A COIN OPERATED APPARATUS

Harry Greenwald, Whitestone, and Pierre Lier, Wantagh, both of N.Y., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Sep. 27, 1976, Ser. No. 727,259

Int. Cl.[2] B65D *87/18*

U.S. Cl. 220—210 **10 Claims**



1. An access door locking mechanism for a coin operated apparatus comprising:

(a) a housing adapted to receive therein portions of a coin operated apparatus, said housing having a wall portion formed with an opening to permit access to said apparatus;

(b) closure means for the opening in said housing wall portion, said closure means being disposed for movement from a releasable position to a secured position relative to said housing wall opening;

(c) engaging means on said closure means and said housing wall portion adapted to interengage upon movement of said closure means to its secured position for retaining said closure means in said secured position, said engaging means adapted to disengage upon movement of said closure means to its releasable position for removing said closure means from said housing wall portion;

(d) the marginal edge portions of said closure means and of the housing wall portion defining said opening having complementary interfitting portions for making the outer surface of said closure means flush with the outer surface of said housing wall portion when said closure means is in its secured position; and

(e) said closure means having an irregular shaped portion projecting outwardly from its outer surface and beyond the outer surface of said housing wall portion when said closure means is mounted to said housing, said irregular shaped closure portion adapted to receive a wrench having a complementary irregular shaped opening for moving said closure means to selectively engage and disengage said engaging means.

4,119,238

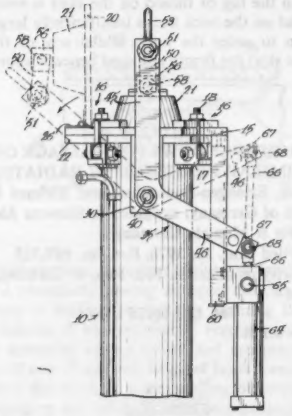
CONTAINER CLOSURE HAVING OPENING MEANS

Hamedo Ali Ja'afar, Rockford, and Walter J. Iseman, Monroe Center, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 5, 1977, Ser. No. 813,222

Int. Cl.[2] B65D *55/00*

U.S. Cl. 220—211 **9 Claims**



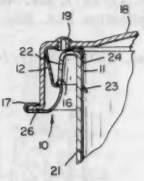
1. A closure for a container comprising, a lid movable relative to an open end of the container between open and closed positions, toggle linkage means supported by the container for movement relative thereto and including a link pivotally connected to said lid, and power means supported by said container and having a movable element connected to said toggle linkage means for moving said toggle linkage means and the lid between open and closed positions and with said linkage positionable to hold the lid closed independently of said power means.

4,119,239

CONTAINER LOCK DEVICE

Howard A. Anderson, Pittsburgh, Pa., assignor to Cities Service Company, Tulsa, Okla.

Continuation of Ser. No. 689,430, May 24, 1976, abandoned.
This application Dec. 5, 1977, Ser. No. 857,639
Int. Cl.[2] B65D *45/16*
U.S. Cl. 220—324 7 Claims



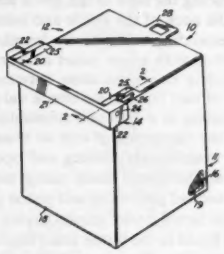
1. In combination, a container having a sidewall terminating in a lip, a cooperating container closure having a sidewall and at least one locking spring clip, said clip defining a strip of resilient material having a pair of spaced, generally paralled legs, and said legs being operable to straddle said sidewall and said lip, one leg of said pair being formed with a shoulder operable to make a locking connection with said lip, said legs being spring biased toward one another so that said one leg of the clip is movable from a first or normal position in which said shoulder makes a locking connection with said lip to a second position in which said shoulder is free of said lip and abutts said closure sidewall operative to limit the stroke of said one leg to avoid without exceeding the elastic limit of said clip.

4,119,240

POSITIVE OPEN RECEPTACLE

Sarah J. Dumas, and Hal S. Dumas, Jr., both of 300 Brentwood Dr., NE., Atlanta, Ga. 30305

Filed Dec. 23, 1976, Ser. No. 753,888
Int. Cl.[2] B65D *43/16, 43/26*
U.S. Cl. 220—331 2 Claims



1. A refuse receptacle unit including:

a receptacle having opposed sides and a bottom wall, and defining an open top refuse chamber and foot chamber therein where said foot chamber is separated from said refuse chamber and is located immediately above the bottom wall;

a cover adapted to cover the open top of said refuse chamber;

hinge means pivotally mounting said cover on said receptacle for pivotal movement of said cover between a closed position in which said cover closes the open top of said refuse chamber, and an open position in which the open top of said refuse chamber is not closed; and,

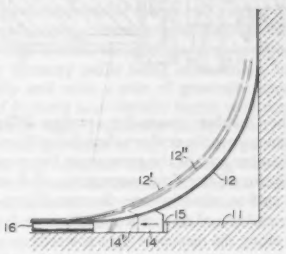
a foot operated mechanism for operating said cover, said foot operated mechanism including a foot pedal having opposed ends within said foot chamber over said bottom wall, one end of said foot pedal pivotally mounted on said receptacle in said foot chamber at one side of said receptacle; and a transfer link pinned to the opposite end of said foot pedal adjacent that side of said receptacle opposite the side which pivotally mounts said foot pedal, said transfer link further connected to said cover so that when said foot pedal is manually depressed intermediate its opposed ends within said foot chamber and toward said bottom wall, said transfer link will cause said cover to be moved toward its open position while the manually depressing force on said foot pedal acts downwardly through said bottom wall of said receptacle to prevent tipping of said receptacle.

4,119,241

CRYOGENIC LIQUEFIED GAS TANK OF THE MEMBRANE TYPE

Kazuhisa Furuta, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Co. Ltd., Tokyo, Japan

Filed Jun. 6, 1977, Ser. No. 804,161
Claims priority, application Japan, Jun. 18, 1976, 51-72048
Int. Cl.[2] B65D *25/18*
U.S. Cl. 220—439 4 Claims



1. A cryogenic liquefied gas tank of the membrane type comprising a rigid outer shell, a compression resistant heat insulating layer provided at the inside of said outer shell, an inner membranous vessel provided at the inside of said heat insulating layer, said membranous vessel having at least one rounded corner portion which changes its shape in accordance with changes of its temperature, at least one movable saddle element provided between said heating insulating layer and said membranous vessel for supporting said corner portion of said membranous vessel, said saddle element having a supporting face which fits said corner portion in the most favorable manner when it is positioned at a predetermined relation with respect to said corner portion, and thermosensitive expansion and contraction rod means arranged along the wall of said membranous vessel and adapted to drive said saddle element in accordance with its expansion or conraction due to changes of its temperature which reflects changes of the temperature of said membranous vessel, thereby shifting said saddle element so that it is positioned at said predetermined relation with respect to said corner portion regardless of changes of the temperature of said inner membranous vessel.

4,119,242

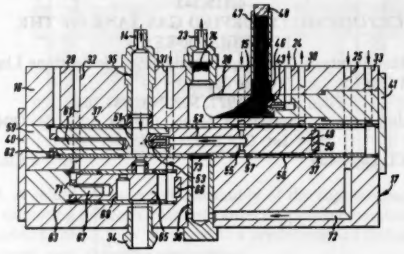
APPARATUS FOR DISPENSING DISCRETE OBJECTS FROM A LIQUID

John Bedford Jesty, Little Meadow, Roke Rd. Bere Regis, Wareham, Dorset, England

Filed Mar. 14, 1977, Ser. No. 777,517
Claims priority, application United Kingdom, Mar. 16, 1976, 10512/76
Int. Cl.[2] B65G *47/14*
U.S. Cl. 221—211 33 Claims

1. Apparatus for dispensing discrete objects individually comprising a housing in which are formed a chamber for containing discrete objects in fluid suspension, a dispenser duct

and a passage which connects the chamber and the dispenser duct; a transfer member; supporting means which support the transfer member for movement within the passage and which co-operate with the transfer member to prevent flow of a discrete object in fluid suspension from the chamber to the dispenser duct through the passage; a recess and a conduit which are formed in the transfer member; an orifice which is formed in the surface of the recess at one end of the conduit and which is too small for one of the discrete objects to pass through it, the transfer member being movable within the passage so that the orifice can be positioned within either of the chamber and the dispenser duct and isolated from the other; means for causing movement of discrete objects in fluid suspension in the chamber; means for creating differential pressure conditions across the orifice when the orifice is positioned within the chamber so that the pressure in the conduit is lower than the pressure of the fluid suspension of discrete objects adjacent the orifice whereby one discrete object can be held against the periphery of the orifice; and means for directing a flow of fluid along the dispenser duct towards an outlet of that duct and transversely across the orifice when the orifice is positioned within the dispenser duct so that the discrete object that was held against the periphery of the orifice and carried through the passage by the transfer member is released from the orifice and conveyed to the dispenser duct outlet by the flow of fluid that is directed across the orifice.



4,119,243

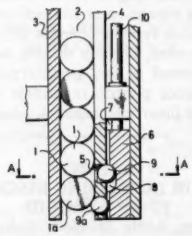
ARTICLE DISPENSING DEVICE

Jan Marecek; Ivan Jergl, both of Stara Tura; Rudolf Arbet, Hrachoviste; Pavol Tanuska, and Viktor Ivana, both of Stara Tura, all of Czechoslovakia, assignors to Chirana, koncern, Stara Tura, Czechoslovakia

Filed Jul. 25, 1977, Ser. No. 818,811

Int. Cl.[2] B65G *59/00*

U.S. Cl. 221—298 **5 Claims**



1. A dispensing and feeding device with a feeding shaft for objects to be dispensed, the shaft having opposing guide walls adjustable relative to each other according to the width of objects to be dispensed and an escapement means for the objects comprising two apertures in one of the guide walls one above the other, said apertures forming a set, a reciprocable shifter on the outer side of said one wall, the shifter having a groove and hollow for each of the sets of apertures, in each of the apertures there being movingly seated a locking element.

4,119,244

UNITARY MOUNTED AIR-PRESSURE PUMP AND LIQUID OUTLET

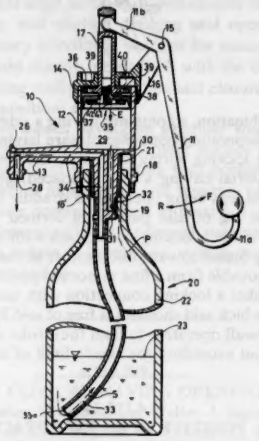
Peter Funke, Sundern, Fed. Rep. of Germany, assignor to Gebruder Funke, Sundern, Sauerland, Fed. Rep. of Germany

Filed Mar. 17, 1977, Ser. No. 778,717

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 7631698[U]

Int. Cl.[2] B65D *83/14*

U.S. Cl. 222—400.8 **15 Claims**



1. An arrangement for withdrawing liquid from a bottle, comprising a manually operable air piston pump mountable on the neck of a bottle, said piston pump having a first portion outwardly embracing the neck of the bottle and second portion extending into the neck of the bottle and being provided with an air channel extending substantially lengthwise of said second portion formed with an air outlet channel having a check valve and providing communication between said air pump and the interior of said bottle, said check valve comprising an outlet bore extending in a direction substantially transverse to the direction of the elongation of said air channel and a blocking element for respectively closing and opening said outlet bore; means for actuating said piston pump; means for sealingly connecting said second portion of said piston pump to the neck of the bottle; and liquid outlet means having a lower end extending into the liquid in the bottle and a discharge end outside the bottle, said liquid outlet means forming an uninterrupted passage for the liquid so that during operation of the pump the liquid flows continuously through said liquid outlet means out of the bottle, thereby also preventing creation of an undesired overpressure in said bottle.

4,119,245

CAP-LESS CONTAINER AND/OR DISPENSER

John L. Conn, P.O. Box 4501-Sta. B, Spartanburg, S.C. 29303

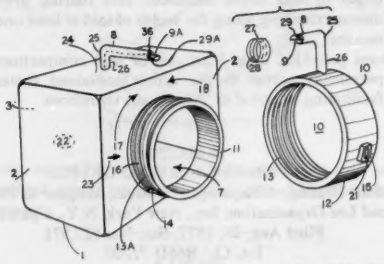
Filed Mar. 2, 1977, Ser. No. 773,678

Int. Cl.[2] A47G *19/12*

U.S. Cl. 222—465 **1 Claim**

1. The combination of a container and removable closure wherein said container comprises a hollow vessel and having a lower transverse side opening, including closure connecting means surrounding said opening said closure having coacting means for being removably mounted on said colsure connecting means in further combination with handles on both container and closure adapted to join when said closure is mounted

on said container to form an integral transverse handle, said closure having coacting means for being removably mounted on said colsure connecting means wherein said closure is ring shaped having a closure wall spaced from and opposite an



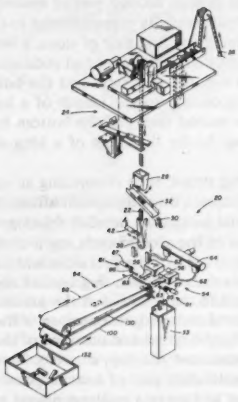
opening including a curvate side wall with a spout, and connecting means includes an operture which aligns with the spout when the closure is in specific position mounted on said coacting means, said closure being movable to a second position in which the spout is sealed.

4,119,246

APPARATUS FOR CRIMPING BELT LOOPS

Joseph W. A. Off, Irving, and Judson Horace Early, Dallas, both of Tex., assignors to Haggar Company, Dallas, Tex.

Filed Jul. 7, 1977, Ser. No. 813,635
Int. Cl.[2] D06C *15/00*
U.S. Cl. 223—52 **36 Claims**



1. Apparatus for automatically crimping precut belt loops, which comprises:

means for receiving precut belt loops in substantially vertical orientation and unfolded condition;

means for directing received belt loops along a predetermined input path;

means positioned adjacent the input path for folding each belt loop in the input path;

means for individually positioning belt loops in the input path for folding by the folding means;

means for sensing a positioned belt loop in the input path and for operating the folding means to fold said belt loop; and

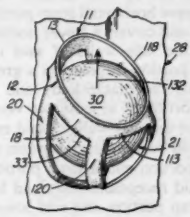
means positioned adjacent the input path and opposite the folding means for receiving folded belt loops and for directing the received folded belt loops in a crimped condition along a predetermined path.

4,119,247

GARMENT-SUPPORTABLE TENNIS BALL POCKET

Barbara Lee Newquist, One Artillery La., Scarsdale, N.Y. 10583, and Scott C. Newquist, 155 E. 88th St., New York, N.Y. 10028

Filed Apr. 28, 1977, Ser. No. 791,868
Int. Cl.[2] A45F *5/00*; A63B *61/00*
U.S. Cl. 224—5 D **9 Claims**



1. A garment-supportable tennis ball pocket comprising

(1) an ovally-open circumambient and lateral rim of relatively stiff, flexible material having transverse elastic recovery memory while being substantially inelastic longitudinally and with a pair of generally opposite sections thereof forming non-circular bights with opposed sides of each such bight positioned more closely toward each other than the sides of the opposed pair of intervening sections and with the latter defining arcs of appreciably lesser curvature, said circumambient rim being of an annular dimension which permits a tennis ball to slip therethrough when this rim is forced into a substantially circular shape;

(2) a plurality of elongated and flexible members depending down from said circumambient rim at annularly spaced areas and converging appreciably below this rim to a bottom common connection whereby they define together a ball-holding pocket below the rim with lateral openings between said members being too small for such ball to exit therethrough, and with the rim retaining its ovally-open shape when a tennis ball is in the pocket whereby exit of the ball out through the rim is prevented until the latter is reshaped to a substantially circular form by applying suitable lateral forces; and

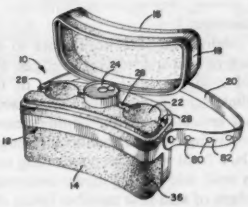
(3) means to fasten said pocket to an exterior of a person's clothing.

4,119,248

PORTABLE ARTICLE CARRIER

J. Clinton Butler, P.O. Box 488, and Sidney W. Kubala, P.O. Box 943, both of Van, Tex.

Filed Mar. 14, 1977, Ser. No. 777,263
Int. Cl.[2] A45C *11/00*
U.S. Cl. 224—5 W **6 Claims**



1. A portable article carrier comprising in combination:

a receptacle body having a substantially flat top and a substantially flat bottom and at least one curved sidewall, curved to conform to the person carrying said article carrier, said receptacle body consisting of thermally insu-

lating material and containing a plurality of pockets each adapted to receive and store a can of beverage and to retain the heat or cold therein;

a receptacle cover for said receptacle body made of thermally insulating material and adapted to seat on said receptacle body;

a harness adapted to receive both said receptacle body and said receptacle cover whereby the body and cover are flexibly connected by said harness wherein said harness includes an upper horizontal strap portion surrounding the side walls of said cover, a lower horizontal strap portion surrounding the side walls of said receptacle body, a bottom strap portion disposed in a groove located in the bottom of said receptacle body and connected to said lower strap portion by at least two vertical strap portions disposed along the side walls of said receptacle body and connecting said bottom strap portion to said lower horizontal strap portion and a strap portion extending along the rear of said receptacle body and between said upper horizontal strap portion and said lower horizontal strap portion, permitting said harness to hingedly connect said receptacle body with said receptacle cover, all of said strap portions being integral with one another; and

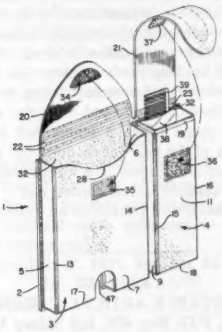
a carrying strap adapted to be worn by a person carrying said portable article carrier and including means adjustably connecting it to said harness.

4,119,249

ARTICLE CARRIER

Horacio Lou Hanson, Diego Rivera 8, Circuito Pintores, Ciudad Satelite, Mexico

Filed Apr. 22, 1977, Ser. No. 789,994
Claims priority, application Mexico, Aug. 30, 1976, 166083
Int. Cl.[2] A45C *11/00*
U.S. Cl. 224—26 R **30 Claims**



1. An article carrier comprising:

a first member having a generally rectangular main body portion including two spaced lateral edges and a bottom edge,

a second member,

means for joining said second member to said first member along each of said spaced lateral edges, along said bottom edge and along at least a portion of the first member intermediate said spaced lateral edges so as to define two individual article receiving compartments, each of said article receiving compartments including a pair of spaced side walls, a front wall interconnecting said side walls and a bottom wall, said joining means intermediate said spaced lateral edges of said first member being disposed between adjacent side walls of said at least two individual article receiving compartments so as to permit deformation of the first member without deforming the individual article receiving compartments,

said first member further including two individual cover members, each of said cover members being associated with a respective article receiving compartment for selectively opening and closing the associated article receiving compartment.

means formed in said first member at least in a fold area of at least one of said cover members for preventing flairing of edges of said cover members, said flairing preventing means extending along the width of said at least one cover member, and

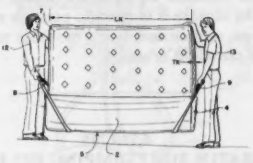
means provided in at least one of said compartments for permitting across to the articls contained therein and facilitating removal of the articles therefrom.

4,119,250

MATTRESS CARRYING DEVICE

Minehart Brutlag, Albuquerque, N. Mex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Aug. 26, 1977, Ser. No. 827,971
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—49 **1 Claim**



1. A mattress carrying device, comprising

heavy cloth-like material shaped as a substantially rectangular parallelepiped having a first pair of spaced substantially parallel sides, a second pair of spaced substantially parallel ends substantially perpendicular to the first pair of sides and joining the first pair of sides, a bottom substantially perpendicular to the sides and ends and joining them and an open top, the first sides and the bottom having a length corresponding to the length of a king-sized mattress and the second ends and the bottom having a width corresponding to the thickness of a king-sized mattress; and

a pair of carrying straps, each comprising an endless strap of substantially square 0 configuration affixed to the bottom of the material in spaced parallel relation with a corresponding one of the second ends, each of the straps also being affixed to both of the first sides and extending at an angle towards the corresponding second ends so that the strap is affixed to the material at the junction of the first sides and second ends and the open top of the material and extends in a loop beyond and outward of the corresponding second ends and the top whereby two people each holding the extending part of a corresponding one of the straps support and carry a mattress placed in the material and resting on the bottom thereof.

4,119,251

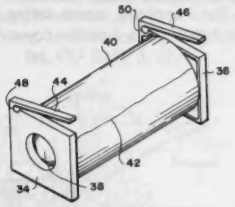
CONTAINER FOR DISPENSING FILM

Jerold Julius Golner, Lowell; William Joseph Miller, North Andover, and Russell Brown Strout, Winchester, all of Mass., assignors to Borden, Inc., Columbus, Ohio

Filed Jul. 15, 1977, Ser. No. 816,026
Int. Cl.[2] B26F *3/02*
U.S. Cl. 225—20 **4 Claims**

1. A container for dispensing film material on a roll comprising a container body having rear, bottom and two side panels forming an interior enclosure with a cover therefore associated with said container; a dispensing slot provided in said cover extending substantially the entire length thereof; a cutter element secured to the upper edge of said front panel extending from one end to the other and projecting thereabove; means

for resiliently urging said cover above said cutter element; a pair of end supports for roll of the film material disposed in said



enclosure on said bottom panel and against said side panels, said resilient means being associated with at least one of said end supports.

4,119,252

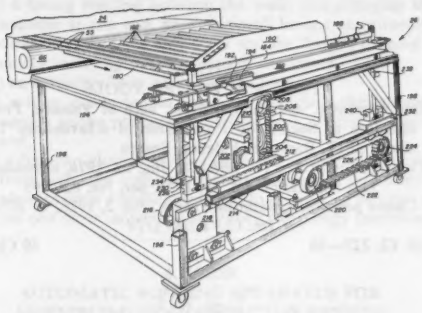
PORTION CONTROLLED FROZEN FOOD

Vincent E. Bernard, Richardson, Tex., assignor to The Jimmy Dean Meat Company, Inc., Dallas, Tex.

Division of Ser. No. 610,301, Sep. 4, 1975, which is a continuation-in-part of Ser. No. 526,146, Nov. 22, 1974, abandoned. This application Sep. 9, 1977, Ser. No. 832,029

Int. Cl.² B26F *3/00*

U.S. Cl. 225—96 **8 Claims**



1. A cutting system for periodically severing a plurality of continuous lengths of material comprising:

means for receiving a plurality of parallel lengths of material traveling in a direction parallel to the axes of said lengths,

an elongated cutting blade disposed above and normal to the direction of travel of said lengths of material,

first means for reciprocating structure transverse to the direction of travel of said lengths of material,

a first pair of bars each pivotally connected at one end to structure reciprocated by said first reciprocating means and at the opposite end to the ends of said cutting blade, said bars being pivotal at said one end about an axis transverse to the direction of travel of said lengths of material, and

second reciprocating means for driving a second pair of bars each connected at one end to said second reciprocating means and at the opposite ends to one of said first pair of bars, respectively, to reciprocate said first pair of bars about the pivotal connection to the structure reciprocated by said first reciprocating means to move said first bars in the direction of travel of and at the same rate of speed as said lengths of material and opposite the direction of travel of said lengths while said first reciprocating means moves said first bars transverse to the direction of travel of said lengths of material such that said blade severs said lengths by moving simultaneously downward and forward, said forward movement being at the same rate of speed as said lengths.

4,119,253

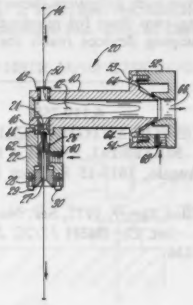
METHOD AND APPARATUS FOR CONTROLLING THE ADVANCEMENT OF A STRAND

Gustav E. Benson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 20, 1977, Ser. No. 807,950

Int. Cl.² B65H *17/32*

U.S. Cl. 226—7 **10 Claims**



1. The method of controlling the advancement of a strand comprising:

directing a first stream of fluid along the strand through a first passageway in a first direction opposite the direction of advancement of the strand to retard the advancement of the strand and to create slack in the strand, and directing said stream of fluid through a second passageway oriented transversely lengthwise with respect to the first passageway in a second direction transverse to the first direction in the absence of another stream of fluid urging said strand into said second passageway sufficient to control the slack in the strand in said second passageway.

4,119,254

APPARATUS FOR PULLING ELONGATED WORKPIECES

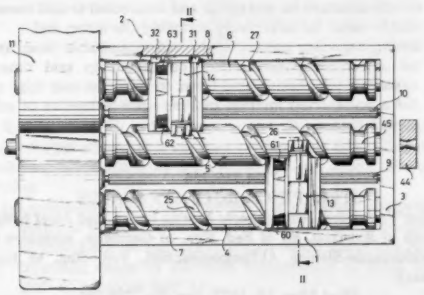
Horst Lorenz, Solingen, Fed. Rep. of Germany, assignor to Th. Kieserling & Albrecht, Solingen, Fed. Rep. of Germany

Filed Jan. 12, 1977, Ser. No. 758,949

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1976, 2600898

Int. Cl.² B65H *51/18, 17/34*

U.S. Cl. 226—112 **8 Claims**



1. Apparatus for pulling elongated workpieces including a pair of reciprocating clamping devices movable in pulling and return directions, drive means for driving said clamping devices in said directions, said drive means including rotatable shaft means having generally helical separate pulling and return drive paths thereon, said drive means further including

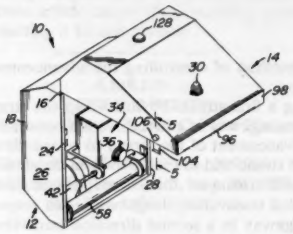
separate pulling and return drive path followers on each said clamping device, switching means for switching said pulling drive path follower into and out of cooperative relationship with said pulling drive path while switching said return drive path follower out of and into cooperative relationship with said return drive path, said switching means including levers mounted on reversing shafts for axial movement therealong and for pivotal movement therewith, said levers having upper ends connected with said clamping devices and other ends having said drive path followers thereon, and said switching means including cam discs for pivoting said reversing shafts when said clamping devices reach the end of a pulling or return stroke.

4,119,255

APPARATUS FOR AUTOMATICALLY DISPENSING MATERIAL FROM A ROLL

Alexander D'Angelo, 1813-15 E. Hart La., Philadelphia, Pa. 19134

Filed Apr. 7, 1977, Ser. No. 785,389
Int. Cl.[2] B65H *17/20, 25/30*
U.S. Cl. 226—136 **8 Claims**



1. An electrical paper roll dispenser comprising:
a base;
a cover pivotally mounted on said base;
means for rotatably supporting a paper roll within said base;
a driven roller rotatably mounted on said base forwardly of said means for rotatably supporting said paper roll;
an idler roller rotatably mounted on said cover, said idler roller being disposed within said cover to rest on said driven roller upon closure of said cover on said base;
a motor having a drive shaft and roller mounted thereon for frictionally driving said driven roller;
a triac connected to said motor for controlling the operation of said motor;
a monostable timer connected to said triac for controlling the state of said triac;
a switch mounted on said cover and connected to said monostable timer for selectively actuating the same; and
a timing capacitor connected to said monostable timer and an adjustable potentiometer connected to said timing capacitor for causing said timer to maintain said triac on for a preselected interval of time upon actuation of said switch.

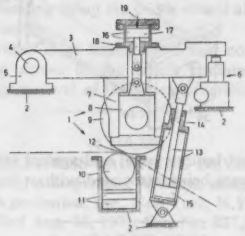
4,119,256

STRIP PINCH ROLL APPARATUS

Lothar Vogtmann, Hilchenbach; Martin Braun, and Josef Kregl, both of Kreuztal, all of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 16, 1977, Ser. No. 778,206
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614254
Int. Cl.[2] B65H *17/20*
U.S. Cl. 226—177 **13 Claims**

1. Apparatus for use in a strip mill and comprising a roll pair to feed metal strip material, one of the rolls of the roll pair being mounted on a pivotal beam by two bearing means which are displaceable independently of each other parallel to the plane of pivotal movement of the beam, setting means supporting the beam and operable to preset the rolls to a selectable spacing, first force applying means acting on the beam and operable to load the rolls in direction towards each other with



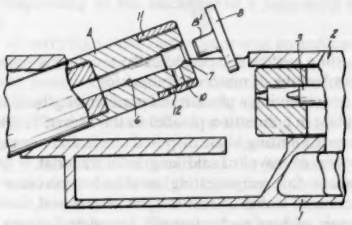
a predeterminable constant holding force, and second force applying means acting on the bearing means and operable to load said one roll with a regulateable auxiliary force selectably in the same direction as or opposite direction to the direction of the holding force applied to that roll by the first force applying means.

4,119,257

POWER ACTUATED TOOLS

Marc Combette, and Jean Ollivier, both of Valence, France, assignors to Societe de Prospection et d'Inventions Techniques SPIT, Bourg-les-Valence, France

Continuation of Ser. No. 698,633, Jun. 22, 1976, abandoned.
This application Jul. 29, 1977, Ser. No. 820,191
Claims priority, application France, Jul. 2, 1975, 75 20748
Int. Cl.[2] B25C *1/14*
U.S. Cl. 227—10 **10 Claims**



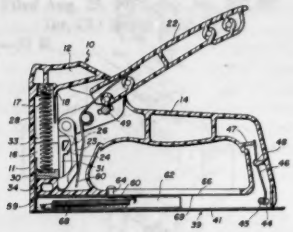
1. In a power actuated tool of the type comprising a breech, a barrel mounted on said breech and including a longitudinal bore, a combustion chamber provided in said breech and adapted for the production of combustion gases from a piece of ammunition carried therein, a percussion mechanism in said breech operatively disposed to fire said ammunition, and an expansion chamber provided in one of said breech and said barrel and communicating between said bore of said barrel and said combustion chamber; the improvement comprising: means for varying the effective volume of said expansion chamber to adjust the operating force of the tool, said means comprising a vent provided in the sidewall of one of said chambers adapted to provide passage for a portion of said gases to the atmosphere and a bush moveably carried about the said chamber having the said vent, said bush including at least one opening adjustably alignable with said vent, whereby flow of said gases therethrough may be controlled.

4,119,258

PLASTIC STAPLE GUN

John F. Ewig, Jr., Worcester, Mass., assignor to Parker Manufacturing Company, Worcester, Mass.

Filed Aug. 1, 1977, Ser. No. 820,442
Int. Cl.[2] B25C 5/10
U.S. Cl. 227—132 4 Claims



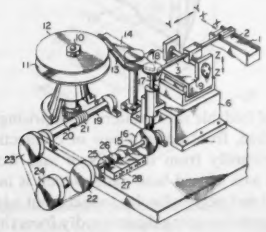
1. A stapler, comprising:
(a) a frame having two spaced, parallel side walls, each in the shape of a closed plane figure formed of a high-density polymer having an integral peripheral web, the webs engaging at a central plane midway between the side walls,
(b) a hammer slidable between the side walls,
(c) a spring residing between the walls and engaging the hammer at one end, each side wall having an inwardly-directed flange, the side walls and the flanges forming a cavity enclosing the other end of the spring,
(d) an actuating lever hinged to the frame,
(e) a lifter connected to the lever for lifting the hammer against spring pressure and releasing it to drive a staple, and
(f) a box-like element integral with an extending inwardly from each side wall, the elements meeting at said central plane to form a resilient member to engage the hammer at the end of its movement to absorb the energy therefrom.

4,119,259

AUTOMATIC BONDING APPARATUS FOR ASSEMBLING SEMICONDUCTOR DEVICES

Yuzaburo Sakamoto, Takasaki, Japan, assignor to Hitachi, Ltd., Japan

Filed Jul. 17, 1973, Ser. No. 379,972
Claims priority, application Japan, Jul. 26, 1972, 47-74183
Int. Cl.[2] H01L 21/60
U.S. Cl. 228—4.5 6 Claims



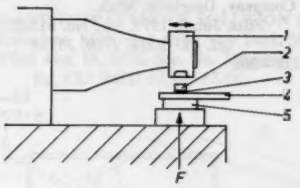
1. A bonding apparatus comprising a bonding arm and means for shifting the arm in longitudinal, transverse and vertical directions, wherein said shifting means comprises horizontal drive cams mounted on a common shaft for shifting said arm in the longitudinal and transverse directions, respectively, a vertical drive cam mounted on a second shaft for vertically shifting an end of said arm, and a mechanism for synchronizing the rotation of the first shaft carrying the horizontal drive cams with the rotation of the second shaft carrying the vertical drive cam, so that the first and second shafts are rotated with a predetermined speed ratio.

4,119,260

METHOD OF MAKING AN ELECTRICAL CONTACT ELEMENT

Dieter Stöeckel, Birkenfeld, Germany, assignor to G. Rau, Pforzheim, Germany

Filed Sep. 2, 1977, Ser. No. 830,318
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642339
Int. Cl.[2] H01R 13/40; B23K 21/02
U.S. Cl. 228—111 4 Claims



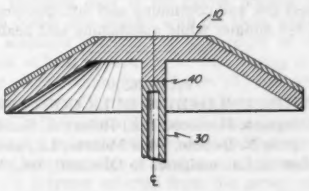
1. A method of producing an electrical contact element having at least one contact piece bonded to a carrier, said method comprising placing an intermediate layer of grinding powder between the contact piece and the carrier, and joining the contact piece and the carrier by sonic or ultrasonic welding.

4,119,261

INERTIA WELDING PROCESS FOR MAKING AN ANODE ASSEMBLY

Thomas M. Devine, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 788,247, Apr. 18, 1977. This application Dec. 12, 1977, Ser. No. 859,610
Int. Cl.[2] B23K 27/00
U.S. Cl. 228—113 4 Claims



1. A method for affixing a stem to a disc which includes an x-ray target affixed to a selected surface area of a substrate to make an anode assembly for a rotating x-ray anode tube comprising
(a) preheating the disc, wherein the substrate comprises a material which is one selected from the group consisting of molybdenum and molybdenum-based alloys to a predetermined range of elevated temperature of from about 200° C. to about 400° C.;
(b) placing the preheated disc and a stem, which comprises a material which is one selected from the group consisting of columbium, columbium 291, columbium 103, and columbium-1Zr, to be joined together in inertia welding apparatus whereby the respective surface areas thereof to be inertia welded together are in an abutting relationship with each other;
(c) subjecting the positioned disc and stem to a predeter-

mined flywheel moment of inertia of from about 9#-ft^2 to about 19#-ft^2, an axial pressure of from about 35,000 psi to about 50,000 psi and a predetermined spindle speed of from about 1400 RPM to 2800 RPM, and

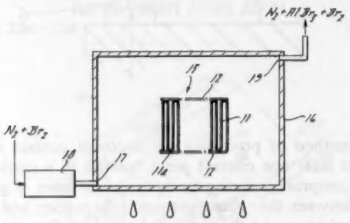
(d) joining the stem to the disc by a weld joint formed at the interface of the abutting surface areas as a result of subjecting the disc and stem to the axial pressure.

4,119,262

METHOD OF JOINING METAL, PARTICULARLY ALUMINUM OR ALUMINUM ALLOYS, USING BROMINE FLUXING AGENT

Chia-Ming Yen, Canton Township, Wayne County, and Duane J. Schmatz, Dearborn Heights, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 5, 1977, Ser. No. 813,057
Int. Cl.^{2} B23K *1/04, 35/38*
U.S. Cl. 228—206 **8 Claims**



1. A method of brazing aluminum members, comprising:

(a) cleaning said aluminum members to be substantially free of oxide,

(b) bringing said aluminum members into joining relationship to provide an assembly having joining sites, said assembly being comprised of said members and of an aluminum-based brazing alloy disposed at the joining sites,

(c) heating said assembly while flowing an inert gas through and about said assembly,

(d) when said aluminum-based brazing alloy has reached a molten state, introducing a gaseous bromine fluxing agent to said inert gas in a quantity of about 1% by volume of said inert gas, and continuing said introduction for a period of 3–5 minutes while maintaining said heating level.

4,119,263

BOTTOM UNLOADING BULK CONTAINER

Jim P. Cuthbertson, Houston, Tex.; Robert A. Bamburg, Hebert, La.; Farris N. Duncan, West Monroe, La., and Roger M. Floyd, Monroe, La., assignors to Olinkraft, Inc., West Monroe, La.

Filed Jul. 29, 1977, Ser. No. 820,285
Int. Cl.^{2} B65D *5/72, 5/48, 47/10*
U.S. Cl. 229—17 B **14 Claims**

8. An improved bulk material container designed for bottom pouring from the container, comprising:

(a) a central shell portion having an upper and a lower opening;

(b) a top cap positioned on the upper opening of said shell portion;

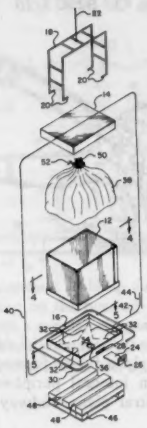
(c) a bottom cap positioned on the lower opening of said shell portion, said bottom cap comprising:

(1) the bottom cap being formed with a central portion having a plurality of side panels hingedly connected thereto;

(2) a plurality of score lines being formed on said central portion for weakening said central portion so that said portion deforms from the weight of the product positioned on the cap into a generally funnel shape;

(3) a pouring opening formed in proximity to said plurality of score lines for removing the bulk product from the container;

(4) a slot being formed in proximity to the hinged connection of one of the side panels and in proximity to said



pouring opening, said slot being sized somewhat larger than said pouring opening; and

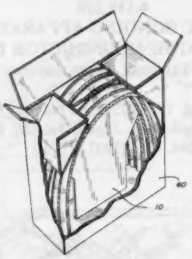
(d) an elongated slide plate positioned in said slot and partially within said container and partially outside of said container and covering said pouring opening.

4,119,264

CONTAINER DIVIDER AND DISPENSING ASSEMBLY

James A. Bennett, Mequon, Wis., assignor to Will Ross, Inc., Milwaukee, Wis.

Filed Jan. 28, 1977, Ser. No. 763,474
Int. Cl.^{2} B65D *5/48, 85/08*
U.S. Cl. 229—15 **5 Claims**



1. A blank of foldable sheet material comprising: a base panel defined by a free, front edge, a pair of connecting edges extending downwardly from the ends of said front edge and away from an axis of said base panel which is in the plane of said base panel and perpendicular to said front edge, a first pair of free, side edges extending downwardly from the ends of said connecting edges toward said axis of said base panel, a second pair of free, side edges extending from the ends of said first pair of said side edges downwardly from said front edge, and a free, rearward edge extending between the ends of said second pair of side edges;

a pair of rectangular, front panels foldably connected to said base panel along said connecting edges, each front panel having a side connecting edge which is a linear extension of one of said first, free side edges; and

a pair of rectangular, side support panels foldably connected

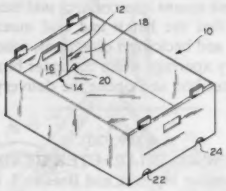
to said front panels along said side connecting edges of said front panels.

4,119,265

SEAMLESS LEAKPROOF CONTAINER

Joseph Dlugopolski, Lombard, Ill., assignor to Fidelity Container Corporation, Chicago, Ill.

Filed Aug. 25, 1977, Ser. No. 827,557
Int. Cl.[2] B65D *5/22, 5/24*
U.S. Cl. 229—31 R **8 Claims**



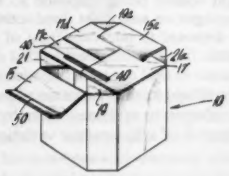
1. A seamless leakproof box comprising a generally rectangular blank divided by a plurality of score lines into a plurality of panels for integrally forming at least bottom, top, two side and two end panels, a pair of triangular corner panels formed between each side panel and its adjacent end panel, said corner panels being defined by extensions of score lines forming the adjacent side and end panels and by a diagonal score line extending from the intersection of said score lines to the corners of said blank, said pairs of corner panels coming together in a face-to-face relationship responsive to an articulation of the adjoining side and corner panels to a box configuration, said face-to-face pair of corner panels folding to lie flat against an adjacent side or end panel, when folded, each of said face-to-face pairs defining an upwardly facing locking notch perpendicular to said bottom panel, and means comprising an outwardly folding flange attached to said end panels for gluelessly folding outwardly over said end of the box and locking into the notch in said folded corner panels while in said flat position.

4,119,266

OCTAGONAL SHAPED PAPERBOARD BULK BIN

Thomas B. Dempster, Sioux City, Iowa, assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 1, 1977, Ser. No. 829,625
Int. Cl.[2] B65D *5/08*
U.S. Cl. 229—39 R **6 Claims**



1. An octagonal-shaped paperboard bulk bin comprising:

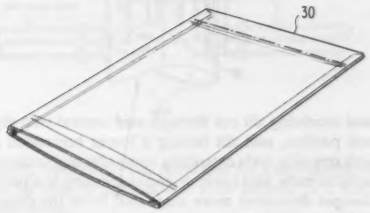
a side wall formed from first and second opposed pairs of substantially rectangular, upstanding side panels and first and second opposed pairs of substantially rectangular, upstanding corner panels that are alternatively, foldably connected, said side panels being of greater width than said corner panels, and with each corner panel including a horizontally disposed, substantially rectangular flap foldably connected to the bottom edge thereof, each side panel of said first pair of opposed side panels including a horizontally disposed, substantially rectangular flap foldably connected to the bottom edge thereof, each side panel of said second opposed pair of side panels having a horizontally disposed, substantially rectangular slotted flap, each slotted flap including two parallel slots disposed perpendicular to the fold line thereof and extending from the edge thereof opposite said fold line for a distance corresponding to approximately one-half the width of each flap of said first pair of opposed side panels whereby with the flaps extending from said corner panels overlapping one another and being wholly disposed within the bulk bin, and with the flaps extending from said first pair of opposed side panels extending through the slots formed in said slotted flaps for engagement with said slotted flaps, a bottom wall for the bulk bin is formed.

4,119,267

BLOOD AND INTRAVENOUS SOLUTION BAG

Agis Frank Kydonieus, 1409 - 2nd Ave., New York, N.Y. 10021

Filed Aug. 18, 1976, Ser. No. 715,584
Int. Cl.[2] B65D *31/02, 37/00*
U.S. Cl. 229—53 **15 Claims**



1. A bag for blood and/or intravenous solutions formed from two rectilinear polymeric sheet panels disposed substantially parallel to each other, joined at the respective edges thereof forming a cavity and having at least one hollow cylinder disposed transversely between the edges of said panels on one edge of the bag to connect the cavity portion of the bag with the exterior of the bag, wherein each panel comprises:

(A) an outer layer of a flexible, heat sealable polymer film having a durometer value between 60 and 80 laminated to

(B) an inner layer, made from a material which does not hydrolyze and/or leach into blood or intravenous solutions, disposed only in the cavity portion of said bag which comes into contact with the blood and/or intravenous solutions wherein the four edges of the bag are formed, at least in part, by the heat sealing to each other of the corresponding outer layers (A) and wherein on at least one edge of the bag the outer layers (A) of each panel project further outwardly than the inner layers (B) and are heat sealed to each other at said projecting portions to form at least one edge of the bag wherein said outer layer (A) is a polymer selected from the group consisting of polyvinyl chloride, polyurethane, silicone or polyvinyl fluoride and said inner layer B) is selected from the group consisting of polyethylene terephthalate, polypropylene, polybutene, polycarbonate, high density polyethylene, fluoromethylethylene, polyfluorochloroethylene, polytetrafluoroethylene, polytrifluorochloroethylene, fluorinated ethylene or polyvinylfluoride.

4,119,268

BAG HAVING A HANDLE SECURED THERETO

Daniel A. Segura, Des Moines, Iowa, assignor to Great Plains Bag Corp., Des Moines, Iowa

Continuation of Ser. No. 670,116, Mar. 25, 1976, abandoned.
This application May 23, 1977, Ser. No. 799,366
Int. Cl.[2] B65D *33/06*
U.S. Cl. 229—54 R **10 Claims**

1. A bag comprising:

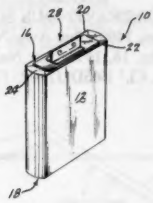
a front wall, a back wall and opposite end walls forming an

enclosed container, said end walls comprising at least two side flaps and at least two end flaps which are folded in overlapping relation to form an end closure for said bag;

a handle operatively secured to one of said end walls, said handle comprising a sheet member folded over upon itself to form a two ply thickness central portion and two diverging laterally extending single ply thickness flaps extending from the lower edge of said central portion in a plane approximately perpendicular to the plane of said central portion;

a flat sheet member secured to one of said end walls and overlapping at least portions of said side and end flaps;

said diverging flaps being in facing engagement with said flat sheet member and operatively secured thereto;



a hand receiving slit cut through said central two ply thickness portion, said slit having a lower horizontal portion with opposite ends extending upwardly and terminating in curlicue ends, said curlicue ends extending in a path which changes directions more than 180° from the direction of said horizontal portion;

said slit forming a flap portion of two ply thickness;

a horizontal fold line on said central portion for said flap portion, said fold line being approximately parallel with said horizontal portion of said slit and approximately tangential to said slit at points spaced from the opposite terminal ends of said slit;

said flap portion being deflected in a lateral direction about said fold line.

4,119,269

SERVICE BOX

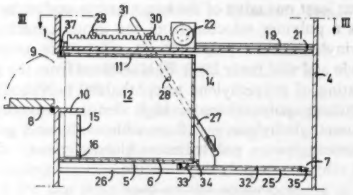
Bo Soderberg, Stockholm, Sweden, assignor to AB Vardeskydd, Gavle, Sweden

Filed Apr. 28, 1977, Ser. No. 791,884

Claims priority, application Sweden, Apr. 29, 1976, 7604939; Mar. 30, 1977, 7703718

Int. Cl.² B65D *91/00*

U.S. Cl. 232—43.3 **13 Claims**



1. A service box having outer and inner boxes which are relatively reciprocable, the outer box having a front wall, side walls, and a back wall, said front wall including an insert aperture and a lockable insert aperture hatch, characterized by the fact that: the outer box, below the insert aperture, has a fixed base extending from the front wall to about halfway to the back wall to provide, between the back wall and the fixed base, a delivery aperture; the inner box having an open bottom and comprising side walls, and a back wall; drive means including cooperating means on the outer portion of the inner box and on the inner portion of said outer box enabling forward and backward reciprocation of said inner box between a forward position over said fixed base and a rearward position over said delivery aperture; a scraper means mounted on a side wall of the inner box adjacent the lower portion of its front end and extended between the side walls of the inner box for the purpose of interacting closely adjacent the fixed base; a sliding hatch; means which mount said sliding hatch for horizontal sliding movement on the outer box immediately below the fixed base to enable closing and opening the delivery aperture; and mechanical link means interconnect said inner box and said sliding hatch so that the hatch and said inner box move in opposite forward and backward directions, whereby the hatch closes the delivery aperture when the inner box is at the front portion of the outer box and opens the delivery aperture.

4,119,270

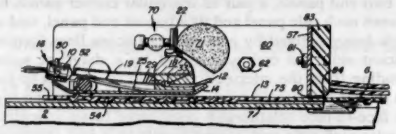
EMBOSSED CHARACTER READER

James E. Hill, Prospect Heights, and Baesley I. Dahlstrom, Des Plaines, both of Ill., assignors to Dynetics Engineering Corp., Wheeling, Ill.

Filed Sep. 14, 1976, Ser. No. 723,215

Int. Cl.² G06K *7/15, 7/04*

U.S. Cl. 235—440 **37 Claims**



1. Read head apparatus for reading embossings or apertures in surfaces, comprising in operative combination:

(a) a means for sensing variations in the contour of said surface disposed to continuously contact said surface during relative motion of said surface with respect to said sensing means;

(b) means for providing light pulses responsive to said contour variations sensed by said sensing means;

(c) said surface sensing means including at least one low-inertia movable spring wire-like finger having a portion disposed to continuously contact said surface so that said contour variations directly effect movement of said finger in response thereto;

(d) said light pulse providing means includes:

i. a light source producing a continuous, directed beam of light,

ii. means for conducting light of said beam,

iii. said light source being disposed so that light of said beam impinges on said light conducting means, and

iv. a mask disposed to intercept light of said beam; and

(e) said movable finger is disposed so that motion thereof in direct response to said contour variations effects interception of light of said beam by motion of said light conducting means relative to said mask thereby producing light pulses indicative of said contour variations.

4,119,271

RAIL BRACING SYSTEM

Frank A. Campbell, 111 Catalpa Ave., Hackensack, N.J. 07601

Filed Apr. 8, 1977, Ser. No. 786,055

Int. Cl.² E01B *9/60, 9/48*

U.S. Cl. 238—336 **14 Claims**

1. In a railway system comprising a railway rail and a fixed anchorage member supporting said rail,

said rail including a flanged base segment, a vertically spaced railway wheel bearing surface and a web segment interconnecting said flanged base segment and said wheel bearing surface,

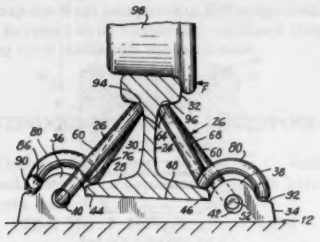
a pair of raised protuberances on said anchorage member in

spaced relationship with each other, at least one of said raised protuberances including a through bore having a horizontal axis,

said rail being supported on said fixed anchorage member between said raised protuberances on said anchorage member,

a rail fastener and brace comprising a unitary length of resilient rod material to secure said rail to said anchorage member and brace said rail against transverse forces,

said rail fastener and brace being bent so as to have one



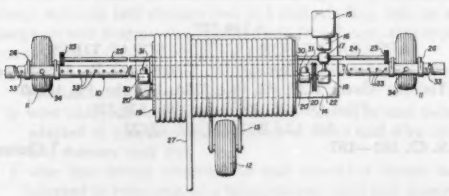
segment thereof disposed within the through bore in said one protuberance on said anchorage member, a second segment in abutting relationship with the upper surface of said rail flange base segment, a third segment in bracing abutting relationship with the web segment of said rail near the juncture of said web with said wheel bearing surface and a fourth segment in abutting bearing relationship to said anchorage member to provide a torsional spring effect to secure said rail to said anchorage member while providing a brace to said rail against transverse forces.

4,119,272

MOBILE AGRICULTURAL IRRIGATION APPARATUS

Hubert Tidwell, P.O. Box 57, Wellington, Utah 84542

Filed Feb. 23, 1977, Ser. No. 771,262
Int. Cl.² B05B 3/18
U.S. Cl. 239—178 **4 Claims**



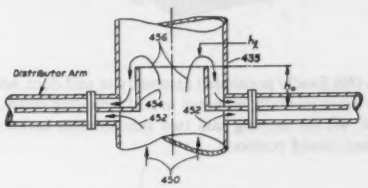
1. A mobile irrigation apparatus comprising a closed end apertured irrigation boom, wheeled carriage means supporting the boom substantially horizontally and including widely spaced traction wheels, a hose reel mounted above said boom on a rotational axis parallel to the boom and being supported by the boom, power drive means supported on the boom and operatively coupled with the traction wheels and hose reel to drive the same simultaneously in opposite directions of rotation, a hose coiled on the hose reel and adapted to have one end coupled with a source of water in a field to be irrigated, and conduit means interconnecting the other end of the hose on the hose reel with the interior of the apertured irrigation boom, said conduit means comprising a tubular drive shaft section for the hose reel having a swiveled connection with said other end of the hose, and tubular arms having swiveled connections with the tubular drive shaft and receiving irrigation water through the drive shaft section from the hose, said tubular arms being connected to said apertured boom and delivering irrigation water to the interior thereof.

4,119,273

SYSTEM FOR POLLUTION SUPPRESSION

Edward T. Armstrong, Butler, N.J., assignor to TII Corporation, Lindenhurst, N.Y.

Division of Ser. No. 531,095, Dec. 9, 1974, Pat. No. 3,998,714, which is a continuation-in-part of Ser. No. 855,738, Apr. 30, 1973, Pat. No. 3,853,764, which is a continuation-in-part of Ser. No. 100,333, Dec. 21, 1970, Pat. No. 3,730,881, which is a continuation-in-part of Ser. No. 813,382, Feb. 28, 1969, Pat. No. 3,549,528, which is a continuation-in-part of Ser. No. 362,118, Apr. 23, 1964, abandoned. This application Nov. 8, 1976, Ser. No. 740,246
Int. Cl.² B05B 3/06
U.S. Cl. 239—254 **5 Claims**



1. A rotary distributor arm apparatus for a sewage treatment system to be used in conjunction with influent to a trickling filter, comprising;

a rotatable central distribution head to receive the influent,

an elongated post extending from the top of said head,

at least two elongated distributor arms connected to and extending substantially horizontally from said head in symmetrical balanced relation thereto, each arm defining a constantly variable section modulus as a function of the radius of said arms, a plurality of tie rods extending from various points along the length of each arm and connected to said post to support said arms in a horizontal plane,

nozzle means along the length of each arm for discharging said influent,

said arms being substantially rectangular in cross section with the longer sides being horizontal, said nozzle means located in the shorter vertical sides, and

a center vertical stiffener web located between said longer sides to provide two channels, said web having holes therethrough to allow influent flow between channels and a false bottom in one of the channels so the flow path thereof is vertically above the other channel.

4,119,274

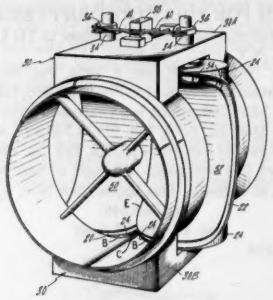
FLOW DIVERTER

Norman F. Fowle, North Palm Beach; William M. Madden, Palm Springs, and James F. Marshall, Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1976, Ser. No. 754,772
Int. Cl.² B64C 15/06
U.S. Cl. 239—265.29 **4 Claims**

1. In combination, a cylindrical duct (7) for flow therethrough, said duct having two directly opposite side sections (20, 22) of semi-circular length movable between an open position where they form a portion of the sides of said cylindrical duct when flow passes through said duct and a closed position where they cooperate to form a block to the flow through said duct and divert it out of both sides, each side section is formed having the same width (A) along its semi-circular length with the ends being of semi-circular shape (B), said semi-circular shape of each end of each section having a diameter equal to the width (A) of the section, cooperating

ends of semi-circular shape (B) are located adjacent each other, pivot means (34) extend outwardly from each end of each section at the center of said semi-circular shape, mounting



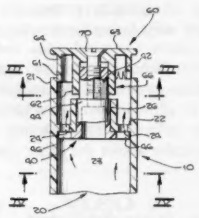
means (30) fixedly positioned externally of said duct, said pivot means being pivotally mounted in said mounting means, means (36, 38, 40) for moving said two side sections between their open and closed positions.

4,119,275

FLUID SPRAY HEAD AND METHOD ADAPTED TO SPRAY SPECIFIC PATTERN

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Filed Jan. 31, 1977, Ser. No. 764,183
Int. Cl.[2] B05B *1/14, 1/30, 15/10*
U.S. Cl. 239—456 **13 Claims**



1. In a fluid spray head for spraying an area disposed radially about the head comprising a substantially tubular body having an axial passageway open at one end and adapted at that end for communication with a source of pressurized fluid, being closed at its other end, and having a plurality of circumferentially-disposed discharged orifices wherein each orifice sprays a segment of the area, the improvement for spraying an irregularly shaped area with a proportionally matching irregularly shaped spray pattern comprising:

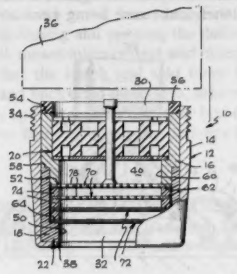
said plurality of discharge orifices being of different cross-sectional areas related to the horizontal distance from the spray head to the edge of the spray pattern segment sprayed by the respective orifice whereby the respective spray streams of said orifices travel for different horizontal distances identically proportionally related to their respective positions in the spray pattern.

4,119,276

LAMINAR STREAM SPOUT ATTACHMENT

Walter R. Nelson, 2501 Redondo Beach Blvd., Gardena, Calif. 90249

Continuation of Ser. No. 663,041, Mar. 2, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,661
Int. Cl.[2] B05B *1/34*
U.S. Cl. 239—590.3 **5 Claims**



1. A laminar stream spout attachment comprising:

a housing defining a closed, nonapertured sidewall about a cylindrical, smooth central passage having an inlet and an outlet longitudinally spaced downstream from the inlet;

at least two longitudinally spaced-apart, parallel plates positioned within and extending across the central passage, each of the plates having small apertures therethrough distributed substantially uniformly throughout the plates, the area of the apertures in each plate being between about 30% and about 35% of the total plate area thereby reshaping the flow velocity profile of the stream in the central passage to have greater uniformity across the central passage, the longitudinal spacing between the plates being between about one aperture diameter and about three aperture diameters; and

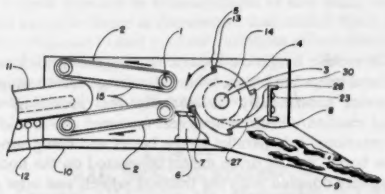
at least two longitudinally spaced, parallel screens positioned within and extending across the central passage the screens being longitudinally spaced downstream from the plates.

4,119,277

APPARATUS FOR CUTTING SCRAP TIRES

J. Rush Snyder, 3013 Harcourt Dr., Greensburg, Pa. 15601, and Timothy Myers, R.D. #2, Box 238A, Latrobe, Pa. 15650

Filed Oct. 28, 1975, Ser. No. 626,321
Int. Cl.[2] B02C *13/02, 18/22*
U.S. Cl. 241—167 **7 Claims**



1. An apparatus for cutting scrap tires comprising:

a. a housing;

b. a shaft, mounted on the housing and connected to any conventional power source for rotation purposes;

c. a plurality of rotary disc cutters, of generally circular design, axially spaced along the shaft, dimensioned with at least one cutting tool mount on the outer circumference of each cutter and directed vertically toward the center;

d. cutting tools attached to the rotary disc cutters at the

location of the cutting tool mounts, of a generally rectangular design, having at least one cutting edge;

e. compression means for compressing scrap tires and feeding the compressed scrap tire transversely into the rotary disc cutters, associated with the housing;

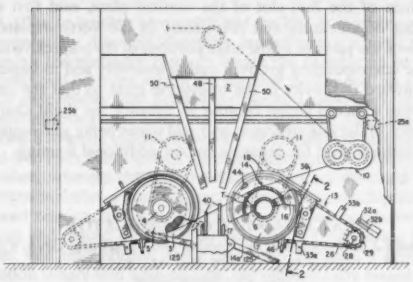
f. a stationary anvil attached to the housing, placed in close proximity to the compression means and the rotating disc cutters; and

g. anvil tools attached to the stationary anvil, of a generally rectangular design having at least one cutting edge, so that the scrap tire is cut into pieces as the compressed scrap tire tends to return to its former uncompressed shape and the cutting tools rotate past the anvil tools.

4,119,278
CONTINUOUS LONG ENDS WIRE SPOOLING APPARATUS

Seymour Draizen, Old Bridge, and Konrad C. Schillebeeckx, Colts Neck, both of N.J., assignors to Syncro Machine Company, Perth Amboy, N.J.

Filed Mar. 7, 1977, Ser. No. 774,674
Int. Cl.[2] B65H *54/02*
U.S. Cl. 242—25 A **12 Claims**



1. Wire guiding apparatus for a spooler having a housing, an initially empty winding reel to receive wire extending along a path adjacent both said winding reel and a dummy reel adapted to receive an initial quantity of wire defining a long end, a fore flange between said dummy reel and said winding reel, an aft flange on said dummy reel opposite said fore flange, said apparatus comprising:

a conveyor adapted for movement at selected times in a path proximate said dummy reel;

a wire entry device mounted to said conveyor and being adapted to intercept said wire and to move said wire onto said dummy reel; and

a wire exit device mounted to said conveyor means and adapted to intercept wire being wound onto said dummy reel and to move said wire onto said winding reel for winding thereon.

4,119,279
APPARATUS AND METHOD FOR ANTICIPATING AN EMPTY SPOOL CONDITION

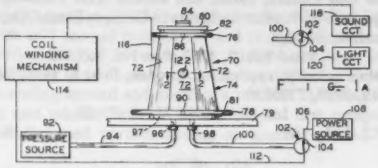
Hugh W. Hosbein, Fort Wayne, IN, assignor to Mossberg Hubbard a Division of Wanskuck Company, Garret, Ind.

Filed Aug. 8, 1977, Ser. No. 822,952
Int. Cl.[2] B65H *75/00, 25/04*
U.S. Cl. 242—54 R **26 Claims**

1. Apparatus for sensing that wire being dispensed from a spool is nearing the end, comprising

a spool having a barrel onto which wire may be wound and stored, said barrel being hollow and hermetically sealed,

valve means for controlling the opening and closing of a pressure escape port in said barrel, said valve means being movable to closed position in response to wire being contiguously wound on said barrel and further being movable to opened position by pneumatic pressure in said barrel when such wire is removed from said barrel, and

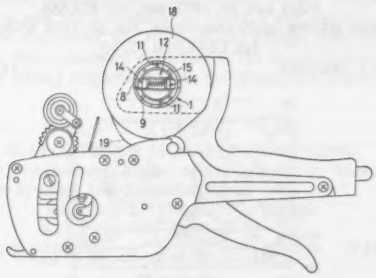


means for sensing the reduced pressure inside said barrel when said valve is opened.

4,119,280
CORE FOR ROLLED LABEL STRIP

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed May 2, 1977, Ser. No. 792,685
Claims priority, application Japan, May 7, 1976, 51-056699
Int. Cl.[2] B65H *75/02*
U.S. Cl. 242—68.5 **22 Claims**



1. A cylindrical core for supporting a rolled label strip thereon and for being detachably attached to the core supporting device of a label printing and applying machine or the like, the core for a rolled label strip comprising:

a cylindrical core body having an inner wall surface having an inner diameter; an attaching section formed in a first end face on one side of said cylindrical core body; said attaching section being provided with an inner bore passing therethrough and said inner bore having a diameter smaller than said inner diameter of said cylindrical body;

raised faces formed on said first end face;

a second end face on the other side of said cylindrical body; fitting recesses formed on said second end face;

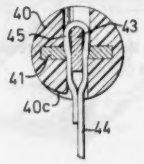
ribs adapted for being fitted to a mandrel, said ribs being formed on said inner wall surface of said cylindrical body and said ribs extending in the direction parallel to the axis of said cylindrical body, the height of said ribs being the same as the diameter of said inner bore; and

a plurality of grooves formed in said inner wall surface of said cylindrical body in the direction parallel to the axis of said cylindrical body.

4,119,281
SPINDLE, PARTICULARLY FOR WINDING UP A STRAP IN A SAFETY BELT FOR VEHICLES

Hannu Olli Paitula, Järna, and Roland Axel Larsson, Södertälje, both of Sweden, assignors to Granges Essem Aktiebolag, Västerås, Sweden

Filed Feb. 3, 1977, Ser. No. 765,283
Claims priority, application Sweden, Feb. 3, 1976, 7601102; Jan. 19, 1977, 7700539
Int. Cl.[2] B65H *75/48, 75/28*
U.S. Cl. 242—107 13 Claims

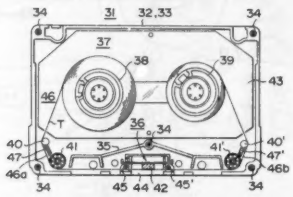


1. A spindle, particularly for winding up a strap in a safety belt for vehicles, comprising:
- a first portion, including at least one metal sheet plate which is provided with a through slot for the strap, which gives the spindle the necessary strength, said first portion consisting of a single metal sheet plate which is bent to substantially U-shape; and
- a second portion which together with the first portion forms a spindle having a substantially round cross section.

4,119,282
MAGNETIC TAPE MAGAZINE

Kengo Oishi, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 28, 1977, Ser. No. 810,856
Claims priority, application Japan, Jun. 30, 1976, 51-86607[U]
Int. Cl.[2] G11B *23/10*
U.S. Cl. 242—199 11 Claims



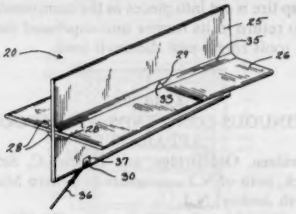
1. A magnetic tape magazine in which a tape passage is formed at least partly by means of fixed guide pins and rotatable guide rollers, wherein the improvement comprises a guide wall having a smooth flat surface and provided in parallel to the tape fed through said tape passage, said guide wall being normally spaced slightly inwardly from the tape passage, thereby preventing the tape from winding around the guide roller.

4,119,283
KITE STRUCTURE

James E. De Yarman, 2943 N. Dousman St., Milwaukee, Wis. 53212

Filed Dec. 17, 1976, Ser. No. 751,723
Int. Cl.[2] B64C *31/06*
U.S. Cl. 244—153 A 1 Claim

1. A kite structure, comprising a vertical plate and a transverse plate, the forward portion of said vertical plate being provided with first grooves along the longitudinal centerline on both sides thereof and the rear portion of said vertical plate having a first slot that opens rearwardly of the plate, the forward end of said first slot being aligned with the first grooves of said plate, and the rearward portion of said transverse plate being provided with second grooves along the longitudinal centerline on both sides thereof and the forward portion of said transverse plate having a second slot that opens forwardly of the plate, the rear end of said second slot being aligned with the second grooves of said plate, said plates being assembled together with the first grooves of the vertical plate receiving the

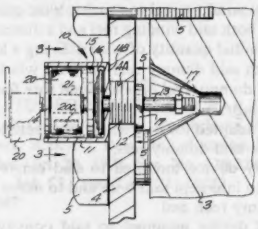


edge portions of the second slot of the transverse plate and the second grooves of the transverse plate receiving the edge portions of the first slot of the vertical plate, said first slot sloping downwardly and rearwardly in the vertical plate to enhance the press fit of the edge portions of the respective slots in the corresponding grooves during assembly and to impart a downward concavity in the transverse plate so that the latter assumes a sort of airfoil contour to enhance the flight characteristics of the kite structure, and said plates being self-supporting without need for separate and/or additional framing.

4,119,284
RAILROAD HOTBOX INDICATOR

Norman J. Belmont, 849 W. Luellan Dr., Roseburg, Oreg. 97470

Filed Sep. 1, 1977, Ser. No. 829,640
Int. Cl.[2] B61K *9/04*
U.S. Cl. 246—169 A 4 Claims



1. An indicator operable in the presence of excessive temperatures in an overheated vehicle wheel bearing assembly, said bearing assembly including an axle mounted bearing race retainer plate centrally apertured and thereat mounting said indicator, said indicator comprising,
- a housing for mounting exteriorly of said retainer plate and including a boss in threaded engagement with the aperture in said retainer plate,
- a visual indicator stowed within said housing, and
- an indicator ejector assembly slidably mounted in said housing and operable to reposition the indicator outwardly of the housing, said ejector assembly including a spring biased stem member terminating inwardly adjacent the axle end, a heat sensitive replaceable retainer of a fusible nature engaged with said stem member to normally hold same in an inoperable retracted state, said ejector assembly including resilient means urging the indicator to an exposed position for deployment by the airstream upon

fusing of said retainer in the presence of excessive bearing temperatures.

4,119,285

PIPE AND CABLE CLIP

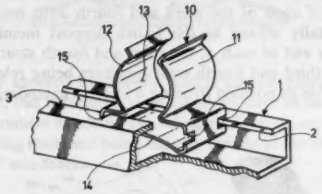
Heinz Bisping, and Erwin Schiefer, both of Munich, Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed May 2, 1977, Ser. No. 792,562

Claims priority, application Fed. Rep. of Germany, May 4, 1976, 2619702

Int. Cl.² F16L *3/24*

U.S. Cl. 248—72 **3 Claims**



1. Clip for holding pipe, cable and the like, comprising a pair of oppositely disposed clamping jaws forming a mouth-like opening therebetween through which the member to be held extends and between which the member is clamped, an elastically deformable base portion extending transversely of and interconnecting said clamping jaws, each said clamping jaw having a free end spaced outwardly from said base portion and said free ends being spaced apart and displaceable toward one another, wherein the improvement comprises that said base portion includes a pair of first bearing locations disposed in spaced relation, and a second bearing location positioned between and spaced from each of said pair of first bearing locations, said base portion being deflectible between a gripping position where said base portion can be resiliently biased into holding engagement with a support member and a release postion where said base portion is released from holding engagement and can be moved relative to said support member, said base portion having a first wall part extending transversely of said clamping jaws and having an arched shape including a convex surface facing toward said clamping jaws and a concave surface facing in the opposite direction, said convex surface having an axis extending generally parallel with the axis of the mouth-like opening between said clamping jaws along which axis a member to be held therebetween extends, said second bearing location positioned at the crown of said convex surface, and said base portion includes a pair of second wall parts each extending from an opposite side of said first wall part transversely of the direction of said first wall part and extending from said first wall part toward said clamping jaws, each of said second wall parts having at least one recess formed therein in the edge thereof extending from said first wall part toward said clamping jaws, and one of said first bearing locations being positioned in the recess in each of said second wall parts.

4,119,286

FURNITURE FRAMES

Claude Barril, 17 Rue Baron, 75017 Paris, France

Filed Mar. 28, 1977, Ser. No. 782,076

Int. Cl.² F16M *11/16*; A47C *7/00*

U.S. Cl. 248—188 **4 Claims**

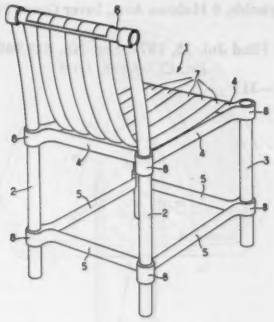
1. A furniture frame comprising

first and second tubular frame components, and

joint means for securing said components together and comprising a joint portion of said first component, and a joint portion of said second component,

said joint portion of said first component comprising a tubular exterior surface and at least two studs secured to said first component, each stud having a head projecting outwardly from said surface, said studs being coplanar and spaced from each other circumferentially of said exterior surface,

said joint portion of said second component being integral with said second component and comprising a flattened portion located between two straight portions thereof extending at an angle to each other, said flattened portion extending around and exerting a resilient clamping action on said tubular exterior surface of said first component, said flattened portion having an annular groove in its



interior surface extending circumferentially of the first component;

said stud heads each extending into said groove to lock said components and prevent longitudinal separation of said first component from said second component,

whereby, spreading said straight portions apart simultaneously unclamps and unlocks said second component from said first component for insertion and removal of the first component, and releasing said straight portions with the first component positioned in the flattened portion of the second component locks the components together.

4,119,287

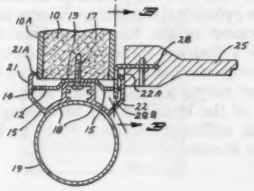
SUPPORTS FOR MOVABLE PARTITIONS

Lloyd C. Mollenkopf, Eagan, Minn., assignor to Rosemount Office Systems, Inc., Lakeville, Minn.

Filed Aug. 2, 1976, Ser. No. 710,899

Int. Cl.² A47G *29/02*

U.S. Cl. 248—243 **7 Claims**



1. In combination, a movable wall panel having a side wall surface and upright end edges, a generally vertical member extending along at least one upright edge of the panel and fixed to said wall panel, said vertical member including an edge portion extending generally normal to the side wall surface and extending outwardly from the side wall surface, a support bracket having a main portion and a leg portion generally parallel to the side wall surface when the main portion extends outwardly from the side wall surface, cooperating hook and slot means on the portion of the vertical member extending outwardly from the side wall surface and on the leg portion of said support bracket, said hook and slot means being engagable

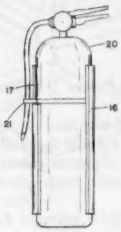
upon movement of said leg portion in direction generally parallel to the side wall surface with the main portion of the support protruding from the side wall surface, and a cover strip attached to said wall panel and having a shield portion overlying said vertical member, said shield portion extending along said side wall surface and being spaced closely from the side wall surface, said leg portion moving between said side wall and said shield portion when the cooperating hook and slot means are moved to be engaged.

4,119,288

FIRE EXTINGUISHER SUPPORT

James T. Reynolds, 6 Holman Ave., Inver Grove Heights, Minn. 55075

Filed Jul. 25, 1977, Ser. No. 818,948
Int. Cl.[2] A47K *1/08*
U.S. Cl. 248—313 **1 Claim**



1. A fire extinguisher support comprising:

an elongated hollow cylindrical member having an inside surface and on outside surface with a nominal inside diameter of dimension X, said elongated hollow cylindrical member formed from a material characterized by flexibility for deforming to receive a fire extinguisher and sufficient resiliency so as to produce sufficient pressure to frictionally support a fire extinguisher therein;

said elongated hollow cylindrical member having an opening defined by an angle θ which ranges from 120° to 135°, said opening extending lengthwise for inserting a cylindrical fire extinguisher having a nominal outside diameter of dimension X; and

a resilient pad mounted to said inside surface of said hollow cylindrical member, said resilient pad extending over a portion of the inside surface of said hollow cylindrical member so that when a fire extinguisher is placed in said hollow cylindrical member said resilient pad forces a portion of the surface of the fire extinguisher into pressure contact with a second portion of the inside surface of said hollow cylindrical member to thereby produce a frictional engagement of the fire extinguisher to said elongated hollow cylindrical member and thereby securely hold a fire extinguisher therein, said elongated hollow cylindrical member having a length which ranges from about 60 to 100% of the length of the fire extinguisher to thereby provide sufficient frictional force to hold a fire extinguisher therein.

4,119,289

COLLAPSIBLE READING STAND

Julianna Kanocz, Holliswood, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 16, 1978, Ser. No. 869,996
Int. Cl.[2] A47G *1/24*
U.S. Cl. 248—454 **1 Claim**

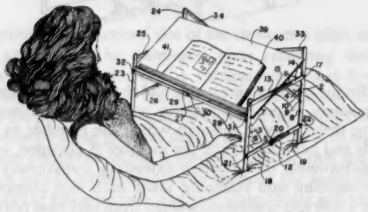
1. A collapsible reading stand, comprising

first and second upright stick-like support members in spaced, parallel upright position with an edge of each facing an edge of the other, each of said edges having spaced notches formed therein;

first and second strut members each having a pair of arms pivotally affixed to each other at one end of each and pivotally affixed to the first support member at another end of each of the first and second strut members and pivotally affixed to the second support member at the other end of each of the first and second strut members, said first and second strut members being releasably securable in position forming a linearly extending part;

third and fourth upright stick-like support members in spaced, parallel upright position with an edge of each facing an edge of the other, each of said edges having spaced notches formed therein;

third and fourth strut members each having a pair of arms pivotally affixed to each other at one end of each and pivotally affixed to the third support member at another end of each of the third and fourth strut members and pivotally affixed to the fourth support member at the other end of each of the third and fourth strut members, said third and fourth strut members being releasably securable in position forming a linearly extending part;



a fifth strut member having a pair of arms pivotally affixed to each other at one end of each and pivotally affixed to the first support member at another end of the fifth strut member and pivotally affixed to the third support member at the other end of the fifth strut member, said fifth strut member being releasably securable in position forming a linearly extending part to position said first and third support members in spaced, parallel relation;

sixth and seventh cross strut members pivotally affixed to each other at their centers and pivotally affixed to the second support member at one end of each of the sixth and seventh cross strut members and pivotally affixed to the fourth support member at the other end of each of the sixth and seventh cross strut members to position said second and fourth support members in spaced parallel relation; and

a book-supporting board-like member positionable in selected grooves of the support members for supporting a book at a desired inclination.

4,119,290

STAND FOR RELEASABLY LOCKING A POLE-LIKE MEMBER IN UPRIGHT POSITION

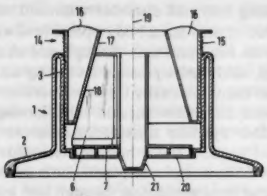
Jakob Gies, Solmser Strasse 14, 6434 Niederaula, Mengshausen, Germany

Filed Sep. 20, 1976, Ser. No. 724,419
Int. Cl.[2] A47G *33/12*
U.S. Cl. 248—523 **8 Claims**

1. A stand for releasably locking pole-like members of different diameters in an upright position, said stand comprising:

a tubular holder for mounting a pole-shaped member; circumferentially spaced clamping members mounted on said holder radially displaceable therein, the radially inner surfaces of the clamping members defining the peripheral outline of the space available for receiving the pole-shaped member; and setting means for selectively increasing and reducing the peripheral outline of said area, said setting means including an axially displaceable setting member disposed between the inner wall of the holder and

the radially outer surfaces of the clamping members and coacting with said inner wall and outer surfaces so as to apply radially inwardly directed pressure upon said clamping members in response to an axially downward movement and to release the pressure in response to an



axially upward movement, and a bottom plate on said holder, said bottom plate including for each of said clamping members a radially extending guide track, each of said clamping members being slidably guided in the respective one of said tracks.

4,119,291

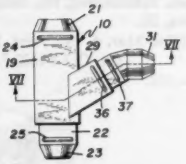
SEWER FORM

Joseph A. Polito, 398 Walnut St., Shrewsbury, Mass. 01545

Filed Mar. 21, 1977, Ser. No. 779,341

Int. Cl.[2] E03F *3/06*

U.S. Cl. 249—11 **7 Claims**



1. Sewer form for use in pouring concrete to form a floor with an invert in a manhole, the manhole having a tubular vertical wall formed with a plurality of pipe openings located at the same general horizontal level, comprising:

(a) a first thin-walled tube having a conical one end adapted to fit against a first one of the pipe openings,

(b) a second thin-walled tube having a conical one end adapted to fit against a second one of the pipe openings and having its other end telescopingly fitted into the other end of the first tube in a snug sliding fit, so that said first and second tubes are adapted to be arranged in fixed relative position with their respective conical ends pressed tightly into their respective pipe openings, and

(c) a third thin walled tube having a first portion, one end of the first portion being attached to said first tube, so that its axis lies at an acute angle to the axis of the said first tube, and having a second portion which has a conical end adapted to fit against a third one of said pipe openings and which has its other end telescopingly fitted into the other end of said first portion in a snug sliding fit.

4,119,292

MOULD FOR MAKING AND HOLDING A WORKING MODEL OF A JAW IMPRESSION FOR THE MANUFACTURE OF DENTAL PROSTHESES

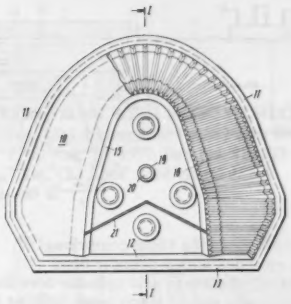
Gerd Haker, Holstenstrasse 73, 2000 Hamburg 50, Germany

Filed Aug. 1, 1977, Ser. No. 820,894

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1976, 7624528[U]

Int. Cl.[2] A61C *9/00, 19/00;* **B29C** *1/16*

U.S. Cl. 249—54 **10 Claims**



1. A mould for the manufacture and receipt of a working model of a jaw impression for use in the manufacture of dental prostheses, which mould comprises a base having an outer side wall, an internal wall spaced from the outer side wall, retaining ribs for the working model arranged between the outer side wall and the internal wall and a hollow projection in the mould base extending into the interior of the mould within the base area bounded by the internal wall, the projection having a floor which is easily reputrable, and includes retaining elements to hold the working model in the mould.

4,119,293

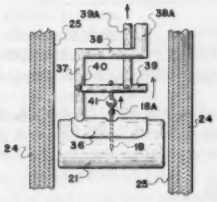
SUPPORT AND INSTALLATION JACK, HOLE FORMING DEVICES AND SETTING TOOL THEREFOR

Erhard Armin Diener, 643 Saskatchewan Crescent E., Saskatoon, Canada

Filed May 9, 1977, Ser. No. 795,105

Int. Cl.[2] B28B *7/30*

U.S. Cl. 249—177 **12 Claims**

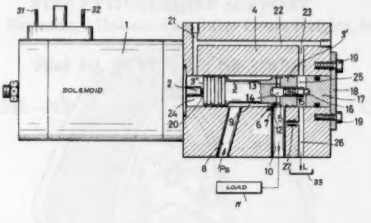


1. A support and installation jack for hole forming devices installed between forms prior to pouring concrete therebetween; comprising in combination telescopic elements moveable from between a released, extended position and a compressed set position and vice versa, a compression spring surrounding said elements, means adjacent the distal end of each of said elements between which said spring reacts, said spring normally urging said telescopic elements towards the said released position, and means co-operating with said telescopic elements to releasably hold said elements in the compressed set position with said compression spring being compressed, the distal ends of said elements being end sharpened.

4,119,294
PRESSURE-REGULATING VALVE

Josef Schnorrenberg, Bad Kreuznach, Fed. Rep. of Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach, Fed. Rep. of Germany

Filed Sep. 24, 1976, Ser. No. 726,430
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1975, 2544001
Int. Cl.² F16K *31/02*
U.S. Cl. 251—129 **9 Claims**

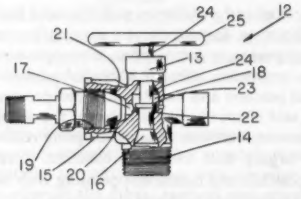


1. A pressure-regulating valve comprising:
a housing provided with a cylinder bore;
a piston axially slidable in said cylinder bore and provided with two axially spaced piston heads defining a peripheral recess between them, said housing having an inlet port opening into said recess between said piston heads and an outlet port leading to a load, said inlet port being connected to a source of high-pressure fluid, one of said piston heads having an edge bounding said recess and defining with said outlet port a restricted passage for said fluid, said one of said piston heads being formed with a blind axial bore opening into said cylinder bore at one end of said piston and communicating with said outlet port via a branch separated from said recess by said edge whereby said axial bore is cut off from said inlet port upon closure of said passage;
adjustable force-transmitting means bearing axially upon the other end of said piston in a direction tending to widen said passage;
venting means connecting portions of said cylinder bore at the ends of said piston to a region of low pressure; and
plug means slidably received in said axial bore, said housing being provided in said cylinder bore with abutment means facing said one end of said piston and backstopping said plug means for developing in said axial bore a load pressure bearing axially upon said piston in a direction opposing widening of said passage.

4,119,295
SEAL FOR LP GAS CYLINDER VALVE

William C. Blocker, 1406 N. Butler Ave., Indianapolis, Ind. 46218

Continuation of Ser. No. 599,323, Jul. 28, 1975, abandoned, which is a division of Ser. No. 478,059, Jun. 10, 1974, Pat. No. 3,929,042. This application Jun. 2, 1977, Ser. No. 802,646
Int. Cl.² F16K *51/00*
U.S. Cl. 251—144 **1 Claim**

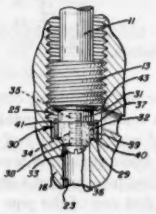


1. In a liquid petroleum valve and tank combination including a tank for holding liquid petroleum with said tank having an outlet aperture, said combination further including a liquid petroleum valve threadedly received by said outlet aperture, said valve having a main body with a chamber formed therein and an inlet passage leading from said outlet aperture to said chamber, said main body further including an internally threaded outlet tube with an outlet passage extending therethrough opening into said chamber with said valve including means mounted to said main body operable to control flow of liquid petroleum from said tank through said chamber and said outlet passage, said outlet passage including an inner tapered portion and an outer internally threaded portion with an annular seat disposed therebetween, said valve having an externally threaded hollow cylinder threadedly received by said internally threaded portion and a hollow stem slidably extending through said hollow cylinder, said stem includes a bullet shaped enlarged head projecting through said annular seat into said inner tapered portion being secured therein by said hollow cylinder wherein the improvement comprises an O-ring seal having a circular cross section seated on said annular seat with said enlarged head forced through and against said O-ring seal effecting a fluid tight seal between said enlarged head and said main body by said hollow cylinder forcing said enlarged head against said O-ring seal with said enlarged head being spaced from said inner tapered portion by said O-ring seal, said stem including a longitudinally extending axis extending centrally through said bullet shaped enlarged head and said annular seat, said head including a frustoconical outer smooth surface projecting through said annular seat which is formed by a first annular surface and a second surface perpendicularly arranged to said first annular surface and said axis, said frustoconical outer surface spaced apart from said first annular surface and said second surface by said O-ring seal which is located between said head and seat and forced against said first annular surface and said second surface by said head providing at least three continuous surfaces of sealing contact on said O-ring seal and between said O-ring seal and said head and said annular seat and further spacing apart all portions of said head from said main body of said valve.

4,119,296
VALVE WITH ENCLOSED SOFT TIP STEM

John N. Scapes, Schaumberg, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 4, 1977, Ser. No. 774,328
Int. Cl.² F16K *1/34*
U.S. Cl. 251—210 **8 Claims**



1. In a valve having a body defining a flow chamber having a first port defined by an annular seat and a second port, a carrier in said flow chamber, and operator means movably mounted in association with said body for moving said carrier selectively inwardly toward and outwardly from said seat, an improved movable valve means for controlling fluid flow through said flow chamber between said ports, said valve means comprising:
a tubular sleeve formed of a cold flowable material having an inner diameter smaller than the inner diameter of said seat and an outer diameter greater than the inner diameter of said seat;

cylindrical mounting means on said carrier defining an inwardly facing shoulder means;

retaining means coaxially carried on the inner end of said mounting means defining an annular, outwardly facing shoulder means abutting the inner end of said sleeve having an outer diameter substantially less than the outer diameter of said sleeve and the inner diameter of said seat and substantially greater than the inner diameter of said sleeve for effectively retaining the sleeve coaxially on said mounting means captured between said inwardly facing shoulder means of the mounting means and the outwardly facing shoulder means of the retaining means; and

a tubular retainer formed of a substantially noncold flowing material coaxially surrounding said sleeve about said carrier cylindrical mounting means outwardly of said inwardly facing shoulder means, and an inner end arranged to abut said body coaxially about said seat when the carrier is moved inwardly to engage said sleeve with said seat, said sleeve being caused to cold flow between said seat and said retaining means in said first port as an incident of each forcible sealing closure of said valve and to have the incremental cold flowed portion remain extended about said shoulder means of the retaining means, said tubular retainer outer end being progressively incrementally urged outwardly about the carrier mounting means by the successive engagements of the retainer inner end with the body as the sleeve is progressively incrementally cold flowed inwardly from within the retainer to about said shoulder means of the retaining means, the axial length of the tubular retainer being substantially equal to the axial length of the sleeve prior to cold flow thereof and the axial length of said carrier cylindrical mounting means being at least approximately one-half the axial length of the tubular retainer whereby at least approximately one-half the sleeve may cold flow from within the tubular retainer before said tubular retainer outer end is disposed at the outer end of said mounting means.

4,119,297

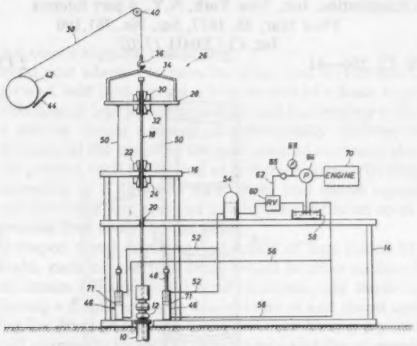
SNUBBING APPARATUS

Albert W. Gunther, P.O. Box 615, Harvey, La. 70059

Filed Mar. 14, 1977, Ser. No. 777,000

Int. Cl.[2] E21B *33/03*

U.S. Cl. 254—29 R **13 Claims**



1. Snubbing apparatus for lowering pipe into a pressurized well and for raising such pipe therefrom, comprising

vertical traveling means releasably secured to the pipe,

raising means secured fraulic or air operated winch drums, and hence this constant pretensioning of cables **50** is not limited to action by cylinders **46**.

fluid piston means operating beneath said vertical traveling means, and

a cable secured for downward movement of said vertical traveling means and to said piston means to effect lowering of said vertical traveling means with the application of fluid force to said piston means,

the application of a raising force by said raising means overcoming the fluid force applied to said piston means causing the raising of said vertical traveling means.

4,119,298

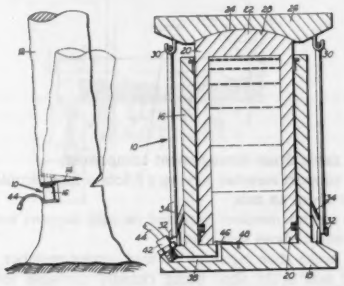
TREE FELLING RAM WITH SAFETY CHECK VALVE

Elmer R. Silvey, 1231 Dutton Rd., Eagle Point, Oreg. 97524

Filed Aug. 18, 1977, Ser. No. 825,729

Int. Cl.[2] B66F *3/24;* **A01G** *23/08*

U.S. Cl. 254—93 R **5 Claims**



1. A ram to assist in felling a tree by engagement between top and bottom portions of a backcut in the tree, comprising

(a) a cylinder portion having a base forming a closed end of said cylinder portion and arranged to engage one of the top or bottom portions of a backcut,

(b) said cylinder portion having an opening at the other end from said base,

(c) a piston in said cylinder portion having extending and retracting longitudinal movements,

(d) said piston having a drive end projecting from the opening in said cylinder portion,

(e) said piston also having a hollow portion facing said base of said cylinder portion,

(f) a head on said piston arranged to engage the other of the top or bottom portions of the backcut,

(g) fluid inlet means leading inwardly from the exterior of said base and opening into said cylinder portion,

(h) said fluid inlet means being arranged for association with a pressure supply and control means for admitting and returning fluid in said fluid inlet means for operating said piston,

(i) and check valve means at said opening of said fluid inlet means into said cylinder portion,

(j) the opening of said fluid inlet means being in alignment with the hollow portion of said piston whereby to locate said valve means within said cylinder portion and also in alignment with the hollow portion of said piston,

(k) said check valve means being operative to allow discharge of fluid under normal retracting conditions of said piston but operative to close off fluid return under abnormal pressure conditions to hold the piston stationary in said housing.

4,119,299

CABLE DRUM ARRANGEMENT WITH BRAKE

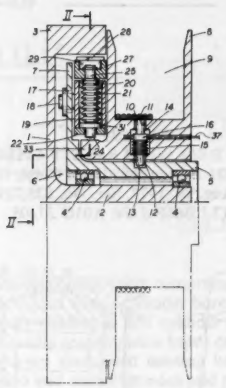
Albert Dietrich, and Alois Breling, both of Markdorf, Fed. Rep. of Germany, assignors to Dornier Gmbh, Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 20, 1976, Ser. No. 724,932

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1975, 2546119

Int. Cl.² B66D *5/04*

U.S. Cl. 254—159 **5 Claims**



1. A cable drum arrangement comprising:

(a) a support member having a friction face circularly arcuate about an axis;

(b) a carrier member mounted on said support member for rotation about said axis;

(c) a brake shoe mounted on said carrier member,

(1) said brake shoe being radially movable toward and away from a position of engagement with said friction face,

(2) the engaged brake shoe and friction face impeding said rotation;

(d) a flyweight mounted on said carrier member for joint rotation with and radial movement on said carrier member relative to said axis;

(e) a cam follower member retained by said flyweight for joint rotation therewith;

(f) abutment means engaging said flyweight and retained on said cam follower member for joint radial movement with said flyweight;

(g) a compression spring radially interposed between said abutment means and said brake shoe for transmitting centrifugally generated force to said brake shoe during said joint rotation;

(h) actuating means responsive to completion of a predetermined number of revolutions of said carrier member about said axis for moving said cam follower member toward said brake shoe and for thereby increasing the stress of said spring sufficiently for transmitting to said brake shoe a force greater than said centrifugally generated force;

(i) a cable drum connected to said carrier member for rotation therewith about said axis during said predetermined number of revolutions and after said increasing of said stress.

4,119,300

BOLLARD-HANGER AND COUPLER SYSTEM

Clifford Goudey, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 23, 1977, Ser. No. 799,903

Int. Cl.² B66D *1/36*

U.S. Cl. 254—192 **9 Claims**

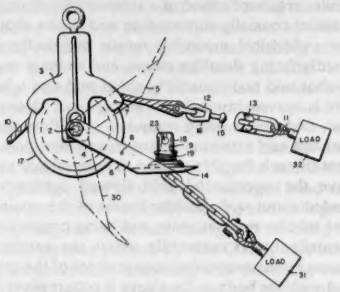
1. Apparatus to be used in conjunction with a bollard having a pulley and which supports a load by a line coupler comprising:

a U-shaped hanger having an end portion and sides connected thereto,

said hanger being pivotally attached to the bollard at the free ends of said sides of the hanger to allow said hanger to rotate about an axis parallel to that of the bollard pulley axis of rotation,

a bollard hauling line passing around the pulley of said bollard and connected to the coupler,

a load line connected between the load and the line coupler,



the space between the sides and said end portion of the U-shaped hanger and the bollard pulley being larger than the diameter of the hauling and load lines and the line coupler to allow said coupler to pass through the space,

said end portion of the U-shaped hanger being adapted to support said coupler and said load when said bollard hauling line is relieved of tension after said coupler has been Hauled-in past said space,

said line coupler comprising a first portion connected to the hauling line and second portion connected to the load line, said portions of said coupler being separable when said second portion of the coupler is supported by said hanger.

4,119,301

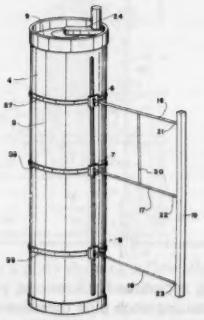
ROLLAWAY FENCE

Dannie L. Payne, Medina, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 25, 1977, Ser. No. 781,190

Int. Cl.² E04H *17/02*

U.S. Cl. 256—41 **2 Claims**



1. A rollaway fence having a plurality of fence posts supported in upright positions in spaced substantially parallel relation to each other, each of said fence posts of said rollaway fence comprising

a housing of substantially elongated cylindrical configuration having a side, a plurality of spaced side holes formed

through the side and extending along an imaginary lateral line thereof, a top base and a top hole formed through the top base;

a split cylindrical guide member coaxially positioned in the housing in spaced relation with said housing, said guide member having a laterally extending gap forming a split therethrough;

a shaft coaxially rotatably mounted in the guide member in spaced relation with said guide member and extending through the top hole of the housing;

a plurality of reels coaxially affixed to the shaft and mutually spaced along said shaft;

a plurality of rolls of flexible fence cable each woundon a corresponding one of the reels in spaced parallel relation with the cable of each of said rolls passing through the gap of the guide member, around said guide member and through a corresponding one of the side holes of the housing;

a cross bar outside the housing positioned parallel to the axis of said housing, the free end of each of the cables being affixed to the cross bar in spaced parallel relation with the other cables and said cross bar being releasably affixable to the next-adjacent fence post; and

handle means positioned outside the housing and affixed to the shaft at the top hole of said housing for manually rotating said shaft to selectively release and retract said cables.

4,119,302

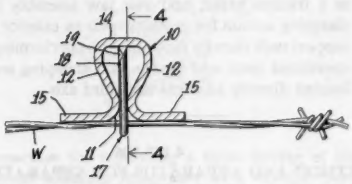
OBJECT SUPPORTS

Philip A. Moroco, 710 S. Buhl Farm Dr., Sharon, Pa. 16146, and Gaylord T. Brow, Bosler Rte., Bosler, Wyo. 82051

Filed Apr. 11, 1977, Ser. No. 786,124

Int. Cl.² B21F *27/00*

U.S. Cl. 256—48 **2 Claims**



1. An object support, comprising:

a metal post adapted to have its lower end driven into the ground, said post having a Vee section of a form to provide spaced legs joined by a bight and converging to form a narrow throat opening of substantially uniform size throughout the length of the post adapted to extend above the ground, each leg having an integrally joined flat flange extending in a direction away from said throat opening and devoid of any portions overlapping the latter so as to provide free access to the same,

a U-shaped metal staple having a pair of legs joined by a bight, each of said legs being round in cross-section for maximum strength in a lateral direction, said staple legs having a diameter larger than the size of said throat opening for drive fit into the latter and each having a pointed end adapted to loosely fit directly into said throat opening to align said staple legs with said throat opening for said drive fit, each of said staple legs having serrations therealong to grip with surfaces defining said throat opening and thereby resist movement of said staple outwardly of the latter, and

said post having spaced welds joining said converging legs at said throat opening to resist spreading of said converging legs when a staple is driven into said throat opening and thereby preventing the loosening of staples already driven into said throat opening, a said staple when driven into said throat opening being adapted to clamp an object between its bight and said flat flanges, and wherein said post legs are flattened to abut each other at the lower end of said post to provide a pointed lower end to facilitate the driving of the post into the ground.

4,119,303

METHOD AND DEVICE FOR PRECIPITATING COPPER CEMENT FROM A COPPER SOLUTION MIXED WITH IRON

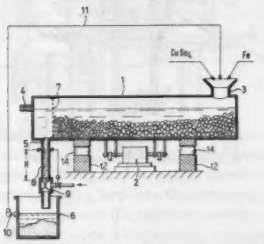
Hans Kellerwessel, Aachen, and Ernst Kausel, Cologne, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Dec. 1, 1975, Ser. No. 636,545

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1974, 2457660

Int. Cl.² C22B *3/00*

U.S. Cl. 266—92 **2 Claims**



1. Apparatus for making cement copper comprising in combination a container having an elongated chamber with a horizontally extending axis for processing a copper solution mixed with pieces of iron, inlet means leading into one end region of said chamber for charging the chamber with a copper solution and iron pieces, a static tube outlet means for the settling of cement copper depending from the bottom portion of the container at an opposite end region of said chamber and communicating with the bottom of the chamber, a valve at the lower end of said static tube outlet means controlling discharge of settled cement copper solution from the tube, a grate means for holding back said pieces of iron located within said chamber and extending transversely thereacross adjacent to but in advance of said outlet means, an overflow liquid outlet at said opposed end region of the chamber, a resilient support for the container accommodating vibration thereof, vibration drive means connected to said container to vibrate said container at a predetermined frequency and amplitude sufficient to cause continued striking together of the pieces of iron, sensing means for said static tube outlet means for determining the level of said particulate material in said tube means and for generating an instantaneous output signal representation of said determination, regulator means functionally associated with said valve for moving said valve between substantially open and substantially closed positions in response to an input signal fed thereto, and controller means functionally interconnecting said sensing means with said regulator means for receiving and comparing said instantaneous output signal with a preset signal generated by said controller means, said preset signal being representative of a predetermined fill level in said tube, said controller being further adapted to generate a difference signal representative of any predetermined comparison between said preset signal and said instantaneous output signal and to feed said difference signal to said regulator means whereby passage of particulate material through said tube is controlled by the fill level thereof in said tube during operation of said apparatus.

4,119,304

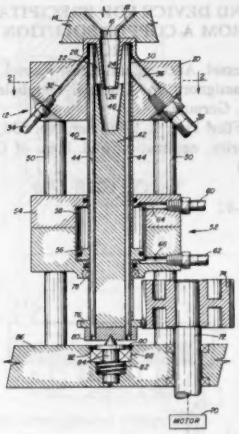
APPARATUS FOR MIXING AND DISPENSING FAST SETTING PLASTIC MATERIAL INTO A MOLD

James S. Groom, Wales, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Continuation of Ser. No. 596,389, Jul. 16, 1975, abandoned. This application Jan. 24, 1977, Ser. No. 762,044

Int. Cl.[2] B01F *7/16, 15/02;* B29F *3/02*

U.S. Cl. 366—189 12 Claims



1. A valve positionable at the opening to a mold cavity to control the flow of and to mix fast setting molding ingredients and comprising housing means defining a mixing chamber having an exit connectable with a mold opening and having two ingredient inlet ports, a mixer head disposed in the housing and including a spindle having a configuration complementary to the shape of the mixing chamber, the spindle being axially movable through the chamber of said housing between a "valve open" position wherein the spindle is withdrawn from the chamber and exposes said ports to admit fast setting ingredients to be mixed individually into the chamber and a "valve closed" position wherein the spindle closes said ports and fills said chamber to eject all ingredients from the chamber, the spindle having a central axis and an outer portion which is rotatably symmetric about the central axis and rotatable on the axis in at least the "valve open" position, at least one mixer element in the head supported by the spindle for rotation in the chamber to thereby effect mixing of the individually admitted ingredients in the "valve open" position and being movably mounted in the spindle to allow the mixing chamber to be filled by the head in the valve closed position, means connected with the spindle for reciprocating the spindle along its axis between the "valve open" and "valve closed" positions, and additional means connected with the mixer head for rotating the spindle about its axis together with the mixer element.

4,119,305

VISE

Emory H. Anderson, 3953 Laguna Blanca Dr., Santa Barbara, Calif. 93110

Filed Dec. 5, 1977, Ser. No. 857,316

Int. Cl.[2] B25B *1/04*

U.S. Cl. 269—71 10 Claims

1. A vise comprising:

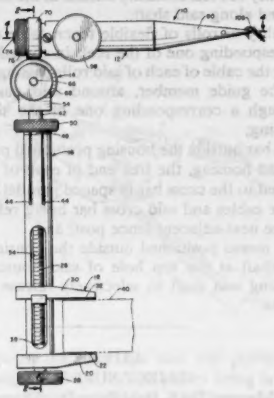
a housing;

clamping means connected to one end of said housing for releasably securing said housing to an exterior supporting structure;

swivel means connected to the free end of said housing, said swivel means being pivotable about a first axis, said swivel means including a first member and a second member, said second member being pivotable in respect to said first member about a second axis, said second axis being perpendicular to said first axis;

second lock means for fixing said first member in respect to said second member, said second lock means also functioning as a frictional brake in the movement of said second member in respect to said first member;

a vise jaw assembly mounted upon said second member and pivotable in respect thereto about a third axis, said third



axis being perpendicular to both said first axis and said second axis, third lock means for fixedly positioning said vise jaw assembly relative to said second member, said third lock means being further capable of being employed as a friction brake, said vise jaw assembly including a clamping section for grasping onto an exterior device and support such thereby facilitating the performing of precise operations upon said device, said clamping section being located directly adjacent said third axis.

4,119,306

METHOD AND APPARATUS FOR SEPARATING AND PROCESSING A PLURALITY OF SUPPLE SHEETS IN A SINGLE OPERATION

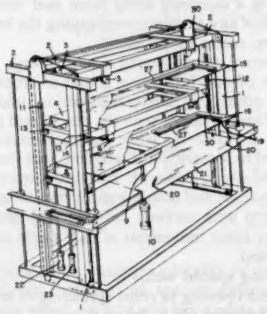
Gaspar A. Bijttebier, Grote Heerweg, 64, B-8749 Beveren-Leie, Belgium

Filed Dec. 15, 1976, Ser. No. 750,815

Claims priority, application Belgium, Dec. 16, 1975, 17082; Netherlands, Jul. 29, 1976, 7608456

Int. Cl.[2] B65H *39/05*

U.S. Cl. 270—58 17 Claims



1. A method for simultaneously separating at least one sheet

from each of a plurality of stacks of sheets, said stacks being positioned on tables vertically spaced one above the other, the method comprising:

(a) bringing said stacks into contact with sets of pick-up devices associated with each of said tables by vertical translation,

(b) picking up at least one sheet from each of said stacks by means of said pick-up devices,

(c) returning said tables and the associated stacks by vertical translation in the direction opposite to that of step a) and thereby separating each picked-up sheet from the underlying stack,

(d) moving supporting members for each separated sheet between said sheet and the stack immediately therebeneath,

(e) disengaging each separated sheet from the pick-up devices so that the sheets drop onto the associated supporting means therebeneath, and

(f) horizontally removing the supporting means with the separated sheets thereon from beneath the pick-up devices to a desired position.

4,119,307

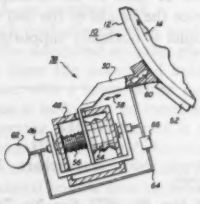
SHEET STRIPPING APPARATUS

Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1977, Ser. No. 807,858

Int. Cl.² B65H *29/54*

U.S. Cl. 271—174 **12 Claims**



1. An apparatus for separating a sheet having at least a portion thereof adhering removably to a moving member, including:

a stripping member spaced from the moving member and arranged to be interposed between the sheet and moving member;

means for detecting the spacing between the surface of said stripping member opposed to the moving member and the moving member; and

means, responsive to said detecting means, for translating said stripping member to maintain the surface of said stripping member opposed to the moving member spaced a substantially constant distance therefrom.

4,119,308

SHEET STRIPPING APPARATUS

Ralph A. Hamaker, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1977, Ser. No. 807,956

Int. Cl.² B65H *29/54*

U.S. Cl. 271—174 **4 Claims**

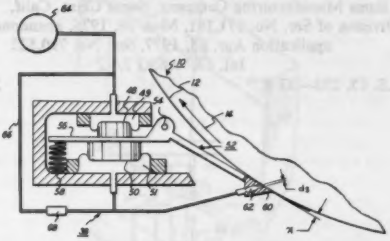
1. An apparatus for separating a sheet from a moving member, including:

a support member;

a stripping member mounted pivotably on said support member, said stripping member comprising a stripping element spaced closely adjacent to the moving member and arranged to be interposed between the moving member and sheet with the stripping element having a passageway terminating in an aperture in the surface thereof opposed to the moving member;

means for detecting the spacing between the stripping element of said stripping member and the moving member, said detecting means comprises means for supplying a pressurized gas to the passageway in the stripping element of said stripping member with the passageway being configured to provide pressure changes in response to variations in the spacing between the moving member and the stripping element of said stripping member;

means for resiliently urging the stripping element of said stripping member to a nominal position; and



a pair of diaphragms coupled to said stripping member and in communication with said detecting means, said pair of diaphragms pivoting said stripping member in response to the detected spacing between the stripping element of said stripping member and the moving member to maintain the spacing therebetween substantially constant, said pair of diaphragms being made preferably from an elastomeric material having a low spring constant with the pressure in one of said pair of diaphragms remaining substantially constant while the pressure in the other of said pair of diaphragms varies in accordance with the changes in pressure in the passageway of the stripping element of said stripping member.

4,119,309

DEVICE FOR THE FLATTENING OF SHEETS BY MEANS OF SUCTION

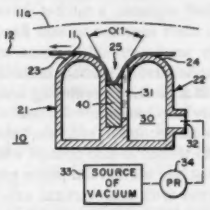
Peter Mayer, and Claus Simeth, both of Muhlheim, Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,905

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2649051

Int. Cl.² B65H *29/68*

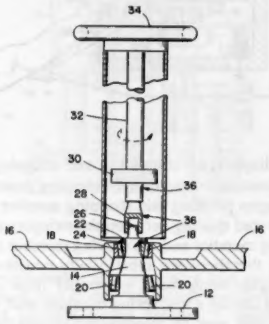
U.S. Cl. 271—183 **10 Claims**

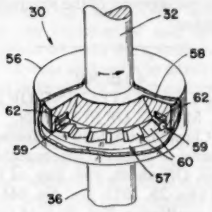


1. In a device for removing curling tendency in sheets in sheet-fed machines, particularly printing presses, having means for conveying a sheet edgewise in a transport plane, the combination comprising upstream and downstream beam-like supporting members arranged transversely with respect to the direction of sheet movement and presenting supporting surfaces which are spaced parallel to one another on one side of

the transport plane to define a groove between them, means for applying vacuum within the groove to draw a passing sheet downwardly into the groove to produce a relatively sharp concave bend in the sheet thereby to counteract the curling tendency, and means including a movable member for changing the cross-sectional profile of the groove to vary the degree of sharpness of the bend.

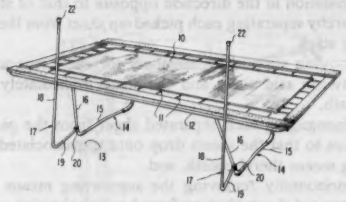
4,119,310
PLAYGROUND TURNTABLE
Bert M. Trubody, Oakland, Calif., assignor to Patterson-Williams Manufacturing Company, Santa Clara, Calif.
Division of Ser. No. 671,181, Mar. 26, 1976, abandoned. This application Apr. 25, 1977, Ser. No. 790,522
Int. Cl.[2] A63G *1/12*
U.S. Cl. 272—33 R **2 Claims**





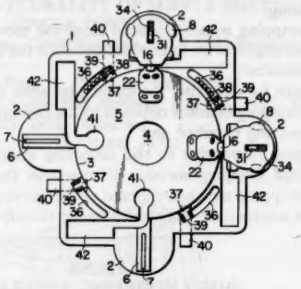
1. A playground turntable comprising a horizontal occupant supporting platform rotatable about a fixed vertical axis; a fixed shaft segment coaxially supporting said rotatable platform; a rotatable shaft segment; a ratchet drive coaxially coupling said rotatable shaft segment to said fixed shaft segment for permitting only unidirectional rotation of said rotatable shaft segment; a handcontrolled wheel mounted to said rotatable shaft segment in a position permitting a user on said platform to continuously grip said control wheel while propelling said platform in unidirectional rotation, upon intermittent application of a hand torque to said control wheel, said ratchet drive comprising first and second flat plates extending perpendicular to and coaxial with said vertical axis, said first plate fixedly secured to said first shaft and having a plurality of upstanding teeth extending radially outward and arranged in a circle around said fixed shaft, said second flat plate having a face with a plurality of elongated radially extending recesses arranged about said vertical axis and confronting said teeth, elongated roller bearings corresponding in number to and disposed in each of said recesses, and means urging said roller bearings against said teeth.

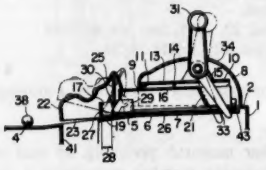
4,119,311
COMBINATION TRAMPOLINE AND REBOUNDING DEVICE WITH DETACHABLE SUPPORT MEANS
John W. Jenkins, 12424 Hillcrest Rd., and A. G. Nichols, Jr., 11515 St. Michaels, both of Dallas, Tex. 75230
Filed Mar. 25, 1977, Ser. No. 781,306
Int. Cl.[2] A63B *5/00*
U.S. Cl. 272—65 **4 Claims**



1. In a trampoline of the type wherein the bed frame is normally supported in a substantially horizontal position or plane by a pair of spaced generally U-shaped main supports having upstanding arms, each of the upstanding arms of the supports diverging outwardly and upwardly away from each other, the improvement which comprises a pair of L-shaped auxiliary supports each having a stem and means for detachably attaching said auxiliary supports to the trampoline to pivot the trampoline bed to a generally upright substantially vertical position or plane for use as a rebounding device, the length of the stem of each of the L-shaped supports being approximately twice the height of the bed frame from a floor when the trampoline is normally supported in its horizontal position.

4,119,312
GAME BOARD
Masatoshi Todokoro, 2-33, Kognaehara 2-chome, Matsudo, Chiba, Japan (270)
Filed Jan. 28, 1977, Ser. No. 763,691
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—1 R **2 Claims**





1. A game board comprising:
(a) an extended base board with a surface, a defined periph-

ery, a defined board center, and ball delivery means to deliver a ball towards said board center;

(b) a plurality of hollow structures modeled after the body portion of an animal or otherwise shaped and disposed at the base board periphery with a slant groove therein extending towards said board center;

(c) A push-out member for each hollow structure, each push out member comprising fore and rear ends, and an upper frame astride said slant groove, a bottom in each of said hollow structures, said bottom being slidably mounted in said slant groove so that said push-out member may be pushed out of said hollow structure towards said board center, a capturing structure shaped like the head of an animal or otherwise, pivotally joined to said push-out member fore end, said capturing structure having a bottom opening which normally engages the board surface and a capturing structure interior upper part with a protuberance at said upper part which when engaged will pivot said capturing structure and raise said bottom opening.

(d) an actuator plate loosely fitted in each of said push-out members so that said plate is reciprocatively movable between the fore and rear ends of said push out member, guide chamber means at the fore end of said push out member and within said capturing structure to guide the fore portion of said actuator plate towards said protuberance;

(e) a protuberant and beveled fore end on each of said actuator plates disposed to enter said guide chamber means and hit the protuberance in said capturing structure so as to raise the capturing structure from the board surface when the actuator plate is moved from the rear end to the fore end of the push-out member; and,

(f) a lever for each push-out member, each having one end engaged with the associated actuator plate, the other end projecting out from the associated animal body-shaped hollow structure with a lever center portion pivoted to said upper frame at said push-out member rear end so that when the projecting portion thereof is moved back and forth, its end engaged with said associated actuator plate operates to force out the corresponding push-out member from said associated hollow structure through said actuator plate and spring means coupled to said lever tending to return said push-out member to its original position.

4,119,313

GAMES RACQUETS

Frank William Popplewell, Saffron Walden, and Frank Raymond Houghton, Cambridge, both of England, assignors to Dunlop Limited, England

Filed Jun. 28, 1976, Ser. No. 700,499

Claims priority, application United Kingdom, Jul. 12, 1975, 29388/75; Oct. 17, 1975, 42603/75; Feb. 7, 1976, 4836/76

Int. Cl.[2] A63B *49/02*

U.S. Cl. 273—73 K **28 Claims**

17. A frame for a games racquet, said frame comprising a head portion and a handle portion, said head portion being in the form of a loop having injection-moulded plastics material defining substantially the entire outer periphery thereof and secured to a tubular metal reinforcement, said tubular metal reinforcement running circumferentially around substantially the whole loop and being positioned so that a portion of its circumference is visible and defines substantially the entire inner periphery of said loop.

4,119,314

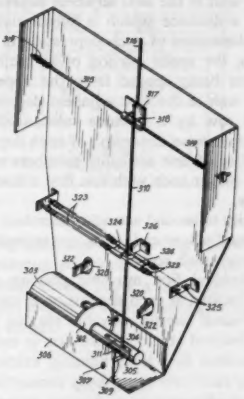
MINIATURE SOCCER-FOOTBALL GAME TOY

Nibaldo Mosciatti Moena, Cochrane 450, Concepcion, Chile

Filed Jan. 24, 1977, Ser. No. 762,124

Int. Cl.[2] A63F *7/06*

U.S. Cl. 273—85 F **2 Claims**



1. A miniature football game toy comprising: a ball; a plate carrying the field on which the game is to be played and having paths along which players of the game are movable; said plate having a field surface with undulations and cavities for guiding said ball towards the foot of a player; figures representing players and goal-keepers moving alternately along said paths on the surface of said plate; a control panel with control keys actuatable by an operator for moving said players and goal keepers, electromagnetic actuator means for mounting the players and goal-keepers being defined by a frame, at least one hollow magnetic coil horizontally mounted on said frame, a lever arm, said coil having a sliding core articulately linked to said lever arm for producing alternate movement of the players, said sliding core and said lever arm being mounted in the lower portion of said frame and further defined by a sliding support carrying a vertical pin and being connected to the upper end of said lever arm, a guide rail, said support being movable on said guide rail in a direction substantially parallel to said sliding magnetic core, said vertical pin having a length of movement corresponding substantially to the length of a guiding slot for the respective player and said plate having a slot for guiding the movement of the players, said actuator means being mounted under said slot.

4,119,315

COMPETITIVE ACTION PLAYING GAME WITH ERRATICALLY MOVABLE PLAYING PIECE

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Jan. 31, 1977, Ser. No. 764,006

Int. Cl.[2] A63F *7/06*

U.S. Cl. 273—85 F **18 Claims**

1. A competitive action playing game playable with a shiftable ball-type playing piece, said playing game comprising:

(a) a game board having a playing surface extending between a pair of opposed player ends, said game board also having a plurality of longitudinally extending rows of playing piece receiving depressions extending from end to end across said playing surface with a plurality of depressions in each such row, each of said depressions being formed by at least one inwardly sloping wall which opens

into an opening at the lower end of each depression, each of the depressions in each of said rows being spaced from the next adjacent depression in the same row by substantially the same distance as an adjacent depression in a next adjacent row of depressions, the depressions in each of said rows being substantially aligned with the same depressions in such rows and the depressions in each row being substantially aligned with the depressions in the next adjacent row, the upper portion of an inclined wall in one depression being spaced from the upper portion of an inclined wall in the next adjacent depression in the same row by a distance which is substantially less than the overall dimension of each depression in the longitudinal direction, the upper portion of an inclined wall in one depression being spaced from the upper portion of an inclined wall in the next adjacent depression in the next adjacent row by a distance substantially less than the overall transverse dimension of each depression,

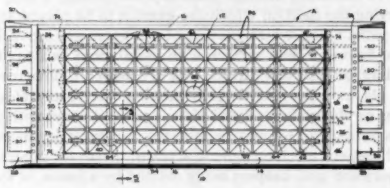
(b) a plurality of first actuating members at the first of the opposed player ends with one first actuating member for each row,

(c) a plurality of second actuating members at the second of the opposed player ends with one second actuating member for each such row,

(d) an individual first movable playing piece projecting element located at each depression in each of the rows,

(e) an individual second movable playing piece projecting element located at each depression in each of the rows,

(f) an individual first longitudinally extending connecting means for each row operatively connecting all of the first projecting elements in such row to an individual first



actuating member associated with such row, said first projecting elements in each row normally lying below said playing surface, said first projecting elements in each row being operatively connected to said first connecting means for each such row so that the first projecting elements in such row will generally simultaneously extend upwardly through the openings in the associated depressions and longitudinally toward the second player end upon actuation of said individual first actuating member to engage and propel a ball-type playing piece initially longitudinally across the playing board, said first projecting elements being shiftable to propel said ball-type playing piece generally and at least initially toward the second player end, and

(g) an individual second connecting means for each row operatively connecting all of the second projecting elements in such row to an individual second actuating member associated with each row, said second projecting elements in each row normally lying below said playing surface, said second projecting elements in each row being operatively connected to said second connecting means for each such row so that the second projecting elements in such row will generally simultaneously extend upwardly through the openings in the associated depressions and longitudinally toward the first player end upon actuation of said individual second actuating member to engage and propel a ball-type playing piece initially longitudinally across the playing board, said second projecting elements being shiftable to propel said ball-type playing piece generally initially toward the first player end, said first and second projecting elements being disposed in side-by-side relationship at each depression in each row,

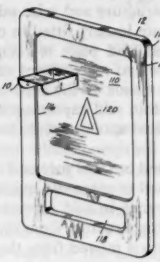
(h) said playing surface being substantially entirely formed by said depressions, so that such ball-type playing piece will alwauys roll into a depression in a particular row requiring the players to anticipate the row into which said playing piece will roll and select and actuate the proper actuating member.

4,119,316

MAGNETIC DART TOY

John S. Kettlestrings, Glendale Heights, Ill., assignor to Cling-Cal Corporation, Carol Stream, Ill.

Filed Mar. 4, 1977, Ser. No. 774,703
Int. Cl.[2] A63B *65/02*; F41J *3/00*
U.S. Cl. 273—95 R **9 Claims**



1. A dart for use in a game or other amusement activity comprising,

(a) a dart body,

(b) a rectangular-shaped magnetic element having a front vertical surface forming a nose portion and carried by said body, and

(c) a rear box-shaped body portion joined to said nose portion and having two spaced vertical sides joined to and separated by a partial crosspiece to create a selectively sized opening defined by said sides, said crosspiece and said nose portion,

said body and said body portion being formed by a single piece of paper-like material cut and folded to provide said crosspiece as said body and said sides extending rearwardly to form said box-shaped body portion.

4,119,317

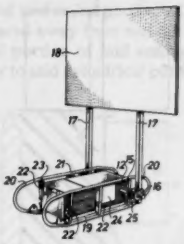
TARGET RAISING DEVICE WITH CURVED SUPPORTING RUNNERS

Ingvar Ohlund, Huskvarna, and Hans Robertson, Jonkoping, both of Sweden, assignors to Saab-Scania Aktiebolag, Jonkoping, Sweden

Filed Feb. 24, 1977, Ser. No. 771,747
Claims priority, application Sweden, Feb. 24, 1976, 7602192
Int. Cl.[2] F41J *1/10, 1/20*
U.S. Cl. 273—105.6 **3 Claims**

1. A target raising device for shooting practice, comprising a target mountable on a transverse shaft rotatable by a motor, a power unit for driving the motor, and a control unit for remote control of the motor, wherein the target raising device is supported by runners which are arranged along each longitudinal side of the device and which are curved up and back at the front and rear ends to form carrying handles, the mass and shape of the target raising device being such that the target raising device may be bodily moved by at least one person when grasping said handles, rods supporting said target pivoting in a plane of movement adjacent the runners, whereby the position of the transverse shaft is substantially at the centre of curvature of the curved parts of the runners at one end of the target raising device, so that as the target is raised or lowered

said rods which support the target and which are attached to the transverse shaft at right angles to it pass by the said curved



parts of the runners approximately at right angles to tangents of the said curved parts.

4,119,318

GOLF BALL FLIGHT INDICATING DEVICE

Mily de Kremer, and Peter de Kremer, both of Poole, England, assignors to Dolcofin Ltd., Poole, England

Filed Apr. 27, 1977, Ser. No. 791,334
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—185 C **7 Claims**

1. A golf swing training device comprising an elongate guide member including an elongate rectilinear guide track portion which provides first and second mutually opposed flat guide surfaces on respective opposite sides thereof, a slide assembly mounted on the guide member and slidable along the length thereof, the slide assembly including first and second plate members each disposed on respective sides of the guide track portion and each providing a respective generally flat surface of substantial surface area, said flat surfaces facing towards each other and thereby being cooperable with respective ones of said first and second guide surfaces, the slide assembly further including spring means urging the first and second plate members towards each other whereby said flat surfaces thereof are pressed into frictional engagement with the adjacent first and second guide surfaces of said guide track portion, such engagement producing a force retarding sliding movement of the slide assembly in both directions along the guide member, the retarding force being substantially uniform along the length of the elongate member, and means for connecting the slide assembly to a golf ball, whereby when the ball is struck into flight the slide assembly is entrained by said connecting means along the guide members against said uniform retarding force.

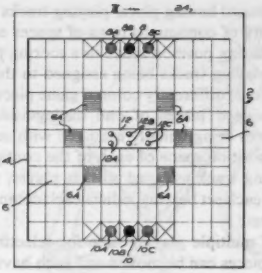
4,119,319

ELECTRICAL BOARD GAME APPARATUS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316

Filed Jan. 6, 1977, Ser. No. 757,216
Claims priority, application United Kingdom, Jan. 8, 1976, 00593/76
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—237 **6 Claims**

1. Apparatus for playing a game comprising in combination a game board having a playing area comprising a plurality of playing positions arranged in regular array, and sets of opposed playing pieces adapted to be moved within said playing area on said playing positions, said playing area including opposed starting/finishing positions and including indicating means which are adapted, upon actuation of operating means connected thereto, to indicate whether a playing piece may move



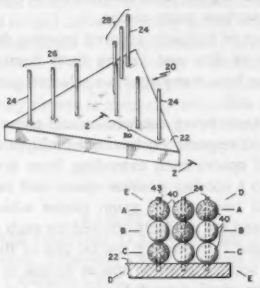
within said playing area, and determining means to determine the number of playing positions to be moved by a playing piece, said indicating means being a plurality of members arranged in pairs, said members being illuminable upon actuation of said operating means.

4,119,320

THREE DIMENSIONAL GAME

Mary Claire Chorba, 228 Bleecker St.; Peter Craig, 42 Bank St., both of New York, N.Y. 10014, and Kurt Pierce Westergren, 173 Sullivan St., New York, N.Y. 10012

Filed Jun. 6, 1977, Ser. No. 803,969
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—241 **18 Claims**



1. A game comprising a base, nine elongated pegs disposed substantially perpendicularly to said base and arranged on said base in spaced relation in three discrete groups, a plurality of pieces each having a hole therethrough, said hole having a cross-sectional area large enough to allow any one of said pegs to pass entirely therethrough, half of said pieces, save one piece, being of one color comprising a first set of pieces, and the remaining pieces save said one being all of a different color defining a second set of pieces, wherein there are an equal number of pieces in said first set and said second set of pieces.

4,119,321

GAME WITH BOARD AND PIECES AND DICE

Jack R. Creel, P.O. Box 2176, Pensacola, Fla. 32503

Filed Jun. 6, 1977, Ser. No. 804,121
Int. Cl.[2] A63F *3/00*
U.S. Cl. 273—248 **5 Claims**

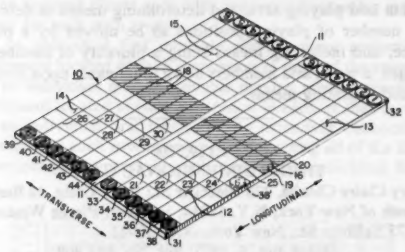
1. A game of the type including game pieces movable upon

a game board by plural players in response to the rolling of dice from starting positions of the pieces to scoring positions thereof to achieve a predetermined winning number of scoring points by adding together the values of the numbers carried by multiple game pieces moved into scoring positions, comprising:

(a) a game board having plural playing tracks each having a multiplicity of contiguous rows of spaces each extending from a starting position space to a scoring position space, and the playing tracks being assigned to the players;

(b) plural sets of differently colored game pieces, each player being assigned pieces of one distinguishing color, the game pieces being initially arranged with one piece in the starting position space of each of the contiguous rows of the playing track assigned to that player, and the game pieces of each set bearing indicia each comprising a different number;

(c) a set of multiple playing dice for selecting which of a player's pieces can be moved and each having faces bearing numbers corresponding with said indicia and having



the various faces distinguishingly colored to match the colors of the sets of game pieces, the faces of the dice in the set having the same distribution of colors and numbers for the various game pieces;

(d) a group of uniquely colored moving dice rollable with said set of dice and having faces bearing numerals for selecting how many spaces a selected game pieces can be moved; and

(e) each player being assigned on said game board two playing tracks respectively having a multiplicity of contiguous rows of spaces each extending from a starting position space to a scoring position space, and each player being assigned two sets of game pieces which bear number indicia and are similarly colored for each player and occupying said two playing tracks, one of the playing tracks having scoring position spaces unique to that player, and the other playing track having only one scoring position space for each row which is accessible to both players but can only be occupied by the game piece of one player at a time.

4,119,322

BRIDGE GAME FOR TWO OR THREE

William Weigl, 1805 Conwood Dr., Troy, Ohio 45373

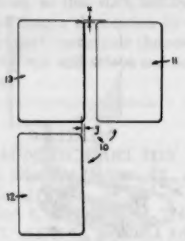
Continuation-in-part of Ser. No. 409,640, Oct. 25, 1973, Pat. No. 4,009,884. This application Feb. 22, 1977, Ser. No. 771,023

Int. Cl.[2] A63F *1/02*

U.S. Cl. 273—293 **16 Claims**

14. In a bridge deck of 52 playing cards used in a bridge game in which two or three players bid to contract for a thirteen card dummy hand which is incapable of verbal response and at least some of the cards of which dummy are unexposed to the players at the time of bidding, the improvement comprising:

means associated with the Aces of said deck and signifying the number of Aces in the unexposed cards of said dummy



hand in response to a Slam bid by one of said players calling for such number of Aces.

4,119,323

HEAT AND SOLVENT RESISTANT FLEXIBLE GASKET MEANS AND PROCESS FOR PRODUCTION THEREOF

Herbert Meister, Langnau a.A., Switzerland, assignor to Herbert Meister and Co., Zurich, Switzerland

Filed May 18, 1977, Ser. No. 798,167

Claims priority, application Switzerland, May 18, 1976, 6222/76

Int. Cl.[2] F16J *15/22*

U.S. Cl. 277—235 R **14 Claims**

1. A preformed substantially heat and solvent resistant gasket sealing means of predetermined cross section comprising:

(a) a core of compacted heat resistant fibrous material;

(b) a first, flexible, substantially helical, metallic winding surrounding said core; and,

(c) an envelope of compacted heat resistant fibrous material surrounding said winding, said envelope being impregnated with a heat and solvent resistant material in sufficient quantity to physically bind said fibrous material into an unitary envelope and to provide a substantially smooth outer surface of predeterminable cross section on said envelope.

4,119,324

BONDED TFE LIP SEAL

Dennis N. Denton, Bessemer City, and David G. Boyd, Gastonia, both of N.C., assignors to Garlock Inc., Rochester, N.Y.

Continuation of Ser. No. 538,542, Jan. 6, 1975, abandoned. This application Nov. 8, 1976, Ser. No. 739,441

Int. Cl.[2] F16J *15/32*

U.S. Cl. 277—134 **9 Claims**

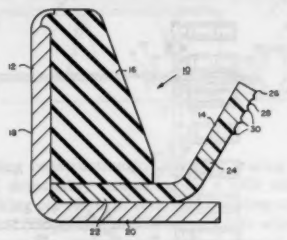
1. A shaft seal comprising:

(a) a single annular metal case including a cylindrical portion and a radial flange;

(b) an annular, flexible, non-elastomeric sealing element having a solid, non-perforated radial portion in contact with the inside surface of said radial flange and also hav-

ing a frusto-conical portion having a sealing lip on the distal end thereof; and

(c) an annular synthetic rubber filler ring located in the annular space between said cylindrical portion of said metal case and said radial portion of said sealing element and being spaced away from and out of contact with said frusto-conical portion of said sealing element and being bonded solely to said cylindrical portion of said metal case



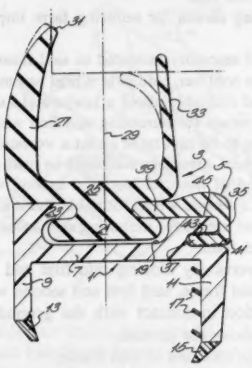
and to said radial portion of said sealing element, said filler ring being a solid body substantially filling said annular space such that said sealing element is held in place against said radial flange of said metal case by said filler ring, said filler ring being molded in place, and including a plurality of hydrodynamic pumping elements molded on a shaft-engaging surface of said frusto-conical portion of said sealing element.

4,119,325

THREE-PART SEAL CONSTRUCTION

John Oakley, Kempston, and Derrick Ruffell, Stevenage, both of England, assignors to Schlegel (UK) Limited, Leeds, England

Filed May 25, 1977, Ser. No. 800,525
Int. Cl.[2] F16J *15/10*; E06B *7/16*
U.S. Cl. 277—207 R **20 Claims**



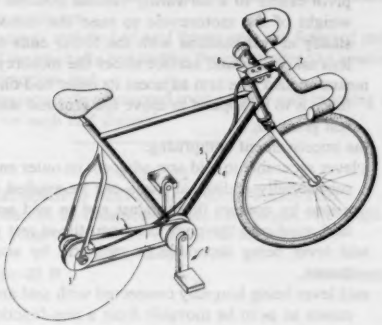
1. A three part seal construction for a container door, said seal construction comprising a first resiliently deformable part of a predetermined generally channel sectioned shape for application to the edge portions of a container door so that when fitted to the door it will form a seal with said edge portions to preclude the passage of moisture to the door edges, a second part having a base for connection to the first part and at least one first resiliently deformable sealing arm upstanding from an edge region of said base for sealing engagement with a portion of the container surface around the door opening, first interengaging means for releasably securing said base of said second part to said first part, and second interengaging means comprising a third part separate from said first and second parts for releasably securing said first and second parts together.

4,119,326

VARIABLE SPEED BICYCLE

John F. Porter, 5019 Newport Ave., Bethesda, Md. 20016

Filed Jun. 10, 1977, Ser. No. 805,357
Int. Cl.[2] B62M *9/08*
U.S. Cl. 280—236 **5 Claims**



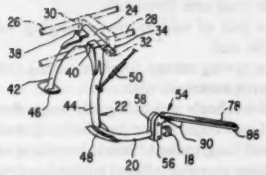
1. A variable speed transmission assembly for a bicycle comprising, a drive shaft rotatably mounted on the bicycle frame, bicycle pedals connected to each end of said drive shaft, a variable speed drive pulley connected to said drive shaft, the rear axle of said bicycle providing a driven shaft, a variable speed pulley connected to said driven shaft, a drive belt extending between said drive pulley and said driven pulley, a pair of plungers slidably mounted on said bicycle frame, one end of each plunger engaging the face of a respective movable pulley half of the drive and driven variable speed pulleys, a pair of bell crank levers pivotally connected to said bicycle frame, one leg of each bell crank lever engaging the opposite end of a respective plunger, a pair of cables, and manual cable actuating means; one end of each cable being connected to the other leg of a respective bell crank lever, the opposite end of each cable being connected to said cable actuating means, whereby when the cable actuating means is moved manually in one direction the effective diameter of the drive pulley is increased while the effective diameter of the driven pulley is decreased; and when the cable actuating means is manually moved in the opposite direction the effective diameter of the drive pulley is decreased while the effective diameter of the driven pulley is simultaneously increased.

4,119,327

LEVER FOR MOTORCYCLE CENTER STAND

Donald E. Emerson, Palmdale, Calif., assignor to Space-Age Control, Inc., Palmdale, Calif.

Filed Jul. 13, 1977, Ser. No. 815,291
Int. Cl.[2] B62H *1/00*
U.S. Cl. 280—302 **9 Claims**



1. In a motorcycle having a main frame,
a center stand pivotally secured to a portion of said frame,
said stand having spaced legs adapted to support the motorcycle on lower ends thereof in an at rest position,
upper end portions of said legs connected to pivot mounting

means, said stand being normally spring biased on said pivot mounting in an upwardly non-functional position,

a side arm on said stand extending laterally outwardly of said frame and motorcycle positioned in the non-functional position to be moved downwardly against the force of the spring to a rearwardly-vertical position and then past the pivot center to a forwardly-vertical position against the weight of the motorcycle to raise the motorcycle to a steady at rest position with the lower ends of the stand legs on the ground surface under the motorcycle,

means on said side arm adjacent its outer end on which said force is to be applied to move the arm and stand to the at rest position,

the improvement comprising:

a lever securable to said arm adjacent its outer end by which substantially additional force can be applied to said last means by contact thereagainst and to said arm to move said stand past the pivot center to the at rest position,

said lever being securable to said arm by arm engaging means,

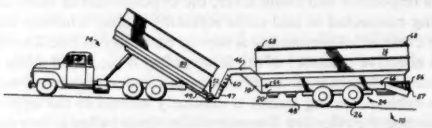
said lever being hingedly connected with said arm engaging means so as to be movable from a non-functional, out of the way position to an operating position to receive said force.

4,119,328

GOOSENECK TRAILER WITH ADJUSTABLE BOGIE

Charles Don Rhodes, P.O. Box B, Petersburg, Tex. 79250

Filed Nov. 19, 1976, Ser. No. 743,295
Int. Cl.[2] B62D *27/06, 53/06*
U.S. Cl. 280—415 B 16 Claims



1. In a trailer having

a rectangular horizontally disposed rigid chassis including

(i) longitudinal chassis members, and

(ii) transverse chassis members,

hitch means connected to the chassis for connecting the trailer to a towing vehicle,

a plurality of ground engaging wheels,

the improved structure for attaching said wheels to said chassis comprising in combination with the above:

two independent bogies, each having

(i) a longitudinal bogie frame member,

(ii) at least one short axle,

(iii) a pair of said ground engaging wheels on said short axle, and

(iv) a spring means for connecting the axle to the bogie frame member, with

(v) the wheels straddling the bogie frame member,

each of said bogie frame members adjustably attached to one of said longitudinal chassis members as follows:

a coupling member affixed to the longitudinal chassis member,

said bogie frame member is slidingly mated to said coupling member,

at least one aperture in said bogie frame member,

a plurality of apertures in said coupling member, and

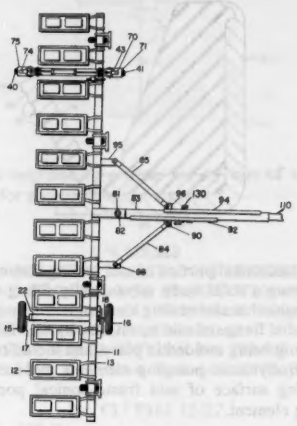
a locking pin through said bogie frame member aperture.

4,119,329

FARM APPARATUS

L. Eugene Smith, R.R. 2 Box 407, Lebanon, Ind. 46252

Filed Jun. 15, 1977, Ser. No. 806,742
Int. Cl.[2] B62D *53/00*
U.S. Cl. 280—415 R 16 Claims



1. A farm apparatus movable by connection to a transporting vehicle comprising:

a frame including an elongated tool bar having a first end and a second end;

first attaching means for securing farm implements to the tool bar;

a first wheel assembly mounted to said frame near the first end of the tool bar, said first wheel assembly including a first wheel rotatable about a horizontal axis;

first mount means for mounting said first wheel assembly to said frame to be pivotable about a vertical axis;

a second wheel assembly mounted to said frame near the second end of the tool bar, said second wheel assembly including a second wheel rotatable about a horizontal axis;

second mount means for mounting said second wheel assembly to said frame;

means for vertically moving said first and second wheels relative said frame, said first and second wheels having a first position in contact with the ground and a second position above the ground;

a towing arm attached to said frame;

second attaching means for attaching said towing arm to said frame to be pivotable about a vertical axis with respect to said frame, said towing arm having a first position parallel to the tool bar and a second position perpendicular to the tool bar;

first locking means for locking said towing arm in the first position;

second locking means for locking said towing arm in the second position;

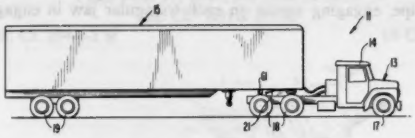
attaching means for attaching said towing arm in the second position to a transporting vehicle for towing the farm apparatus in a field and

for attaching said towing arm in the first position to a transporting vehicle for towing the farm apparatus to and from a field.

4,119,330
JACKKNIFE RESTRAINING MECHANISM

Grover H. Capps, Travelers Rest, S.C., assignor to Trucksafe, Inc., Taylors, S.C.

Filed Dec. 16, 1976, Ser. No. 751,158
Int. Cl.[2] B62D *53/08*; B60T *7/12*
U.S. Cl. 280—432 11 Claims

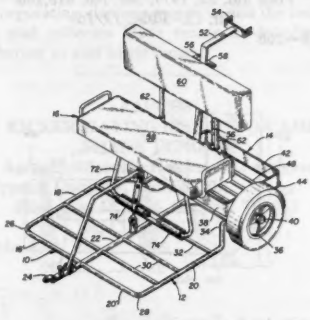


1. A coupling construction for use on a tractor and trailer pivotally and detachably connected by a fifth wheel on the tractor and a king pin on the trailer, said coupling construction comprising first cooperable means on said fifth wheel and said trailer and operable to restrain relative pivotal movement between said tractor and trailer and prevent vehicle jackknifing, control means operable by a driver of the vehicle from within a cab on said tractor to render said first cooperable means operative or inoperative, second cooperable means on said fifth wheel and said trailer and operable, when said first cooperable means is inoperative, to limit the allowed relative pivotal movement between the tractor and trailer to prevent engagement between the sides thereof.

4,119,331
COLLAPSIBLE GOLF CART TRAILER

R. Kelley Jackson, 665 S. Alton Way, Denver, Colo. 80231

Filed Sep. 26, 1977, Ser. No. 836,249
Int. Cl. B62k *15/00*
U.S. Cl. 280—639 5 Claims

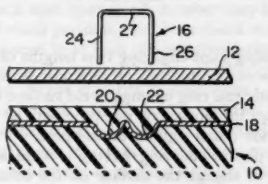


1. A collapsible cart trailer, comprising:
(a) a horizontal base frame having right and left hand longitudinal frame members and a central longitudinal frame member joined by a plurality of transverse stringers into a unitary rigid structure;
(b) a longitudinal seat support arm pivotally attached to said frame near the forward end thereof and extending upwardly and rearwardly to a predetermined height, and then extending horizontally rearwardly to a free end;
(c) a transverse seat support bracket pivotally attached to said frame at a point rearwardly of the free end of said seat support arm and extending upwardly and forwardly from the frame to an upper end, said upper end carrying a transversely extending sleeve pivotable thereon and a longitudinally extending sleeve perpendicularly connected to the transverse sleeve and engageable with the free end of said arm;
(d) a seat having transverse and longitudinal channels on the bottom side thereof adapted to receive said transverse and longitudinal sleeves, respectively;
(e) mechanically retractable tensioning means connected to said frame between the pivotal connections of the support arm and transverse bracket and connected to the bottom of said seat forwardly of said transverse channel for retaining the seat, support arm, and transverse bracket in fixed relative positions;
(f) hitch means attached to said frame near the forward end thereof for pivotally connecting the cart trailer to a source of locomotion; and
(g) a transverse axle connected to the frame and carrying a wheel on each end thereof.

4,119,332
ASSEMBLING METHOD AND APPARATUS

Arthur A. Merrill, 25 Commodore Rd., Chappaqua, N.Y. 10514

Filed Mar. 30, 1977, Ser. No. 782,633
Int. Cl.[2] B42D *1/06*
U.S. Cl. 281—25 R 14 Claims

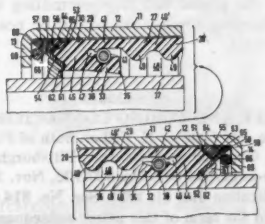


1. A fastening assembly for one or more sheets of material comprising a backing having an anvil means incorporated therein, and at least one fastener means for penetrating through the material and part way through said backing to contact said anvil means whereby said fastener means is clenched to secure the material to the backing.

4,119,333
PIPE COUPLING

Immanuel Straub, 7323 Wangs, Switzerland

Filed Jul. 18, 1977, Ser. No. 816,792
Claims priority, application Austria, Jul. 21, 1976, 25375/76
Int. Cl.[2] F16L *17/04*
U.S. Cl. 285—112 8 Claims



1. A pipe coupling for coupling together the pipe ends of pipes which are to be interconnected, comprising:
a clampable housing capable of being clamped about the pipe ends intended to be interconnected;
a sealing gasket enclosed in said housing and possessing a substantially C-shaped axial cross-sectional configuration;
said sealing gasket being open towards an inside portion thereof and having confronting legs structured as sealing lips and a web bearing against an inner surface of said housing, said sealing lipas extending between a respective lip root and a respective lip free end, the free end of each lip defining a sealing edge, each sealing edge defining an

inner diameter greater than the outside diameter of said pipe ends prior to clamping of said clampable housing; and

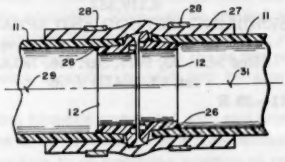
a respective helical spring ring for supporting the web at the sealing lips arranged at a point intermediate said lip roots and said sealing edges.

4,119,334

SPINWELDED PLASTIC PIPE COUPLING JOINT

Michael Halsey Steed, East Palo Alto, Calif., assignor to Fafco Incorporated, Menlo Park, Calif.

Filed Jul. 1, 1977, Ser. No. 812,135
Int. Cl.[2] F16L *21/00*
U.S. Cl. 285—236 **9 Claims**



1. A coupling joint engaging two lengths of plastic pipe at surfaces adjacent to the ends thereof, comprising

a first plastic end ring having a weld surface thereon formed to engage the surface on one pipe with an interference fit to provide radial rigidity to said pipe,

a second plastic end ring having a weld surface thereon formed to engage the surface on the other pipe with an interference fit to provide radial rigidity to said pipe

so that when the weld surfaces on said first and second plastic end rings are spun onto their respective pipe surfaces, the ring and pipe surfaces fuse from the heat of friction and upon cooling form a weld joint therebetween, and said end rings provide said additional radial rigidity at the pipe ends,

a flexible sleeve overlying said first and second plastic end rings to form a seal therewith whereby the axes of the pipe lengths may be misaligned,

means on the periphery of said first and second plastic end rings for engaging the interior of said flexible sleeve and for inhibiting axial motion thereof relative to the plastic pipe,

and clamping means overlying said flexible sleeve and said first and second plastic end rings for clamping said flexible sleeve to form a seal, said additional radial rigidity provided by the plastic end rings permitting application of higher clamping forces than would be possible without said end rings.

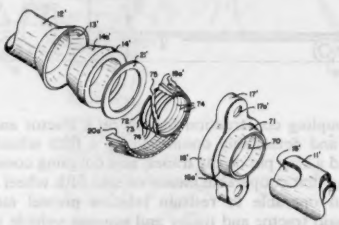
4,119,335

PIPE AND TUBING CONNECTORS

Paul F. Rieffle, and Charles E. Felker, both of Pittsburgh, Pa., assignors to Coupling Systems, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 737,700, Nov. 1, 1976. This application Jul. 11, 1977, Ser. No. 814,435
The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.
Int. Cl.[2] F16L *17/00*
U.S. Cl. 285—337 **12 Claims**

1. A coupling for one or more pipes comprising an elongate sleeve adapted to receive coaxially two opposing pipe ends to be connected, said sleeve having frusto-conical enlarged ends opening outwardly, a pair of cylindrical elastomer gaskets having frusto-conical end portions adapted to fit in the frusto-conical ends of said sleeve in sliding engagement around the pipe ends to be connected, a follower member bearing on each of said gaskets to force them into the sleeve ends, a frusto-conical opening in each follower member around the pipe ends being connected, said opening in each follower member having its large end opening toward the large end of the frusto-conical ends of the sleeve, a plurality of generally triangular jaws spaced apart around each pipe end to be connected within the frusto-conical opening in the follower member, a split cylinder between said triangular jaws and said pipe to be connected, said split cylinder having stop means on both inner and outer surfaces, said jaws around each split cylinder abutting the adjacent gasket and pressing against said gasket coaxially of the pipe, engaging means on each triangular jaw in engagement with the stop means on the outer surface of said split cylinder and tightening means acting on the follower means to move the follower means axially together whereby the gaskets are forced into the frusto-conical ends of the sleeve in sealing engagement with said ends and the pipe ends to be connected and simultaneously the triangular jaws are forced into tight radial engagement with the exterior of the pipe ends and the split cylinder around the pipe to be connected so as to prevent the pipe ends being moved axially out of the sleeve.

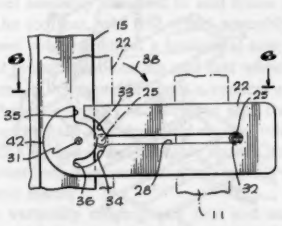


4,119,336

SECURITY LATCH

Frederic D. R. Sparrevohn, 388 Flint Ave., Long Beach, Calif. 90814

Filed Jul. 22, 1977, Ser. No. 818,108
Int. Cl.[2] E05C *17/16*
U.S. Cl. 292—268 **8 Claims**



1. A security latch comprising:

a closure means secured along the marginal region of a door and extending beyond the edge thereof;

flat latch plate means of thickness less than a gap between said door edge and the adjacent jamb of said door and mounted for rotational movement generally tangent to said door edge in the gap between said door edge and the adjacent door jamb about an axis which is anchored to said door jam and perpendicular to said door edge when said door is closed, and wherein said latch plate means extends outward beyond the plane of said marginal region of said door when said door is closed;

said latch plate means having three operative positions constituting a latched position preventing door movement, a restricted position allowing limited door movement and an unlatched position allowing full door opening and closing movement; and

said closure means being in engagement with said latch plate means in said latched and restricted positions of operation

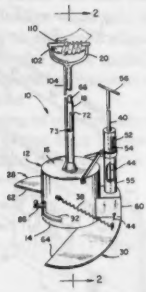
and movable with said door and freely disengageable from said latch plate means when said latch plate means is in said unlatched position.

4,119,337

SANITARY PICKUP AND DISPOSAL DEVICE

John Sherhandt, 0-153 Tunbridge Rd., Fair Lawn, N.J. 07410

Filed Nov. 17, 1977, Ser. No. 852,210
Int. Cl.[2] A01K *29/00*
U.S. Cl. 294—1 R 15 Claims



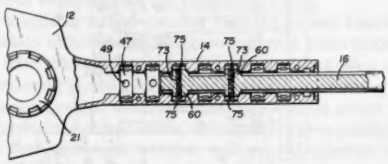
1. A santiary pickup and disposal device for removing animal waste deposits comprising a receptacle, said receptacle having an intake opening, said intake opening lying within a plane, collector blade means adapted for movement substantially within the plane of said intake opening, said collector blade means being selectively displaceable from an initial open position beyond a margin of said opening to a closed position contiguous to and overlying said opening, said receptacle being adapted for removal of waste deposits by envelopment of said deposits within the intake opening and by the cooperative action of the collector blade means being slidable under the waste deposit for capturing same within the receptacle and further incorporating cleaning means within the receptacle for contacting said collector blade means to dislodge any substances adhering to said blade means.

4,119,338

CARPET KICKER HAVING MEANS FOR ADJUSTING SHANK LENGTH

Clarito R. Agcaoili, Glendale Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Aug. 13, 1976, Ser. No. 714,052
Int. Cl.[2] A47G *27/04*
U.S. Cl. 294—8.6 3 Claims



1. A carpet kicker for stretching carpet having a pile and a backing, comprising:

(A) A housing formed of an upper housing member and a lower housing member affixed together by fastening means comprising:

(1) A head member having a plurality of pins adjustably mounted for engaging said carpet,

(2) A handle member having a plurality of detent members internally positioned therein in fixed relationship to said handle member and spaced apart by detent grooves, and having a plurality of groups of detent depressions, the depressions of each group being in coplanar arrangement and spaced apart 90° circumferentially, each group being spaced axially from adjacent groups, and

(B) An inner shank member arranged to telescope within said handle member and having a padded member mounted at the end thereof for being engaged by the knee of an operator, said inner shank member having at least one cam member in fixed relationship thereto, said cam member being provided with a transverse bore having a helical compression spring mounted therein with a ball bearing at the end of said spring adapted to engage said detent depressions,

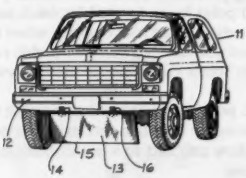
wherein the handle member portion of said upper housing member and the handle member portion of said lower housing member are each provided with spaced-apart ball bearing guide members each defining a segment of an inner cylindrical surface, the ball bearing guide members of said upper housing member cooperating with the ball bearing guide members of said lower housing member to define inner cylindrical surfaces on which the ball bearing of said cam member travels, and each cylindrical surface having four of said detent depressions for engaging said ball bearings either in the locked operative position or in the unlocked adjustment position, and providing indexing during axial adjustment movement to indicate the positions in which said inner shank member may be rotated to place it in the locked position, said inner shank member being adapted to be placed in at least one rotative position wherein said cam member is disposed within one of said detent grooves and engages the detent surfaces of said detent members to restrain said inner shank member axially, and being adapted to be rotated to another rotative position in which said cam member is free of said detent members and said inner shank member is free to be moved axially to another position with respect to said handle member indexed by said detent depressions, and wherein said inner shank member is adapted to be rotated again to the original rotative position in which said cam member once again engages said detent members and said inner shank member is once again fixed axially with respect to said handle member at a different relative axial position.

4,119,339

VEHICLE UNDERCARRIAGE AIR DEFLECTOR

Arthur Sherman Heimburger, P.O. Box 246, Nashville, Ind. 47448

Filed Sep. 10, 1976, Ser. No. 721,975
Int. Cl.[2] B62D *35/02*
U.S. Cl. 296—1 S 13 Claims



1. An undercarriage air deflector apparatus comprising:

an elongated panel having hinge means along a marginal edge thereof adapted to attachment to a lower portion of a vehicle ahead of a vehicle front wheel suspension member;

first bracket means connectable to the lower portion of the vehicle ahead of a front wheel suspension member and having bearing means therein;

drive shaft means supported in said bearing means and having a drive pinion thereon;

second bracket means connectable to the lower portion of the vehicle ahead of a vehicle front wheel suspension member;

rocker shaft means mounted in said second bracket means

and including a rocker shaft extending parallel to said panel;

operating arm means connected to said rocker shaft means and to said panel for pivoting said panel about said hinge means as said rocker shaft means is turned; and

a drive gear on said rocker shaft means engaged by said pinion and thereby operable upon rotation of said drive shaft means to turn said rocker shaft means for pivoting said panel about said hinge means.

4,119,340

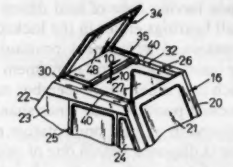
ROOF WINDOW FOR CRANE OPERATOR'S CAB

Roger M. Wolfe, Toddville, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed Aug. 1, 1977, Ser. No. 820,780

Int. Cl.[2] B60J *7/08*

U.S. Cl. 296—137 B **8 Claims**



1. In an operator's cab for a crane or the like:

a cab having a rear side and a roof with a roof opening in the latter;

a movable window unit;

and a pair of hinge assemblies connected between said cab and said window unit to enable the latter to be moved between a closed position relative to said roof opening and an open tilted position clear of said roof opening and adjacent the rear side of said cab;

each hinge assembly comprising a link;

first pivot means for pivotally connecting one end of said link to a first point on said cab adjacent a lateral edge of said roof opening, said link being pivotable about said first point to a position wherein said link is supported by said cab between said rear side of said cab and the rear edge of said roof opening;

and second pivot means for pivotally connecting the other end of said link to a second point on said window unit adjacent a lateral edge of said window unit, said window unit being pivotable about said second point;

said second point being located between said first point and the front edge of said roof opening when said window unit is in closed position and being locatable rearwardly of said first point when said window unit is swung to open position;

said second point being located so that the center of gravity of said window unit lies near said second point whereby said window unit tilts to a position adjacent said rear side of said cab.

4,119,341

REAR WINDOW ASSEMBLY FOR A TRUCK CAB

Eddie G. Cook, 5727 W. Wilshire, Phoenix, Ariz. 85035

Filed Dec. 8, 1977, Ser. No. 858,610

Int. Cl.[2] B60J *5/10*

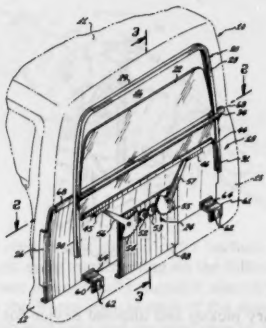
U.S. Cl. 296—146 **8 Claims**

1. A power operated rear window assembly for a truck cab having a floor panel, opposed side panels and a rear panel in the upper part of which a window opening is formed, the window opening having a top, bottom and opposed sides, said power operated rear window assembly comprising:

(a) a window channel assembly of inverted generally U-shaped configuration having a bight portion and a pair of laterally spaced legs and having a brace affixed transversely between the legs to provide an upper portion and a lower portion;

(b) said window channel assembly mountable on the inner surface of the rear panel of the truck cab with the upper portion thereof aligningly conforming with the window opening formed in the rear panel of the truck cab;

(c) a transparent window mounted in said window channel assembly and movable therein between a raised position in the upper portion thereof and a lowered position in the lower portion thereof,



(d) power operated window regulator means mountable in the truck cab and operatively connected to said transparent window for moving thereof;

(e) a closure panel mountable in the truck cab for enclosing said power operated window regulator means and said transparent window in the lowered position thereof; and

(f) sealing means on the brace of said window channel assembly and on said closure panel for sealingly bearing on opposite sides of said transparent window.

4,119,342

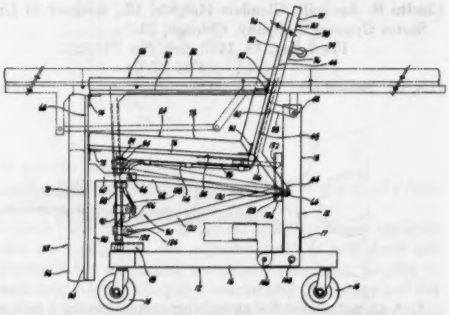
CONVERTIBLE CHAIR STRUCTURE

Claude C. Jones, 303 N. Library, Waterloo, Ill. 62298

Filed Apr. 29, 1977, Ser. No. 792,355

Int. Cl.[2] A47C *1/02*

U.S. Cl. 297—80 **3 Claims**



1. A chair structure convertible from a seating mode to a prone mode comprising:

(a) base means, including ground wheel means,

(b) back means including an upper portion and a lower portion of reduced width, and including first and second hinge points disposed in spaced relation,

(c) front means having a lower portion and a bifurcated upper portion and including first and second hinge points disposed in spaced relation,

(d) seat means connected between said back means and said

front means at said first hinge points and receivable between said bifurcated upper portion,

(e) arm means connected between said back means and said front means at said second hinge points and disposed on either side of said seat means,

(f) mounting means operatively connecting the back means to the base means in pivotal relation for rotation of the back means from a substantially upright position in the seating mode to a substantially horizontal position in the prone mode,

(g) said front hinge points and said back hinge points defining a four sided linkage when said structure is in the seating mode tending to approach alignment when the structure is rotated into the prone mode,

(h) support means operatively connecting the seat means to the base means, and

(i) the seat means being of substantially the same width as the reduced portion of the back means and the distance between the bifurcated portion of the front means.

4,119,343

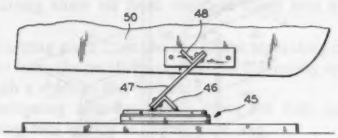
PLATFORM ROCKER STRUCTURE

Fred R. Pentzien, Naperville, Ill., assignor to Kroehler Mfg. Co., Naperville, Ill.

Continuation-in-part of Ser. No. 759,912, Jan. 17, 1977, abandoned. This application Aug. 29, 1977, Ser. No. 828,477

Int. Cl.[2] A47C *3/02*

U.S. Cl. 297—264 **3 Claims**



1. A platform type rocking seat, comprising

(a) a floor engaging base for supporting a seat,

(b) an angled structural member mounted on said base in a direction transverse to the central vertical plane through the front and rear of said seat, said member having two intersecting surfaces forming an upwardly directed apex,

(c) a second angled structural member mounted across the underside of said seat above, rearwardly, and in parallel to said first-mentioned member, said second member also having two intersecting surfaces forming a downwardly directed apex, with the rearward surface of the latter disposed in a plane parallel to the forward surface of said first member and displaced forwardly therefrom a slight distance,

(d) straight coplanar flexure members of epoxy glass laminate material of a thickness corresponding to said distance extending between said rearward surface of the second structural member and the forward surface of said first member, and

(e) means for affixing the opposite ends of said flexure members to the said rearward and forward surfaces of said respective structural members.

4,119,344

VEHICLE SEAT BELT ASSEMBLY WITH IMPROVED BUCKLE SECTION

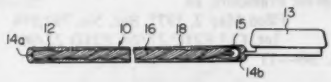
Iori Kondo, Kosai, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed Dec. 10, 1976, Ser. No. 749,463

Claims priority, application Japan, Dec. 11, 1975, 50/167510[U]

Int. Cl.[2] A62B *35/00*

U.S. Cl. 297—385 **8 Claims**



1. In a vehicle safety seat belt, a buckle section comprising,

an anchor element at one end of the buckle section to be fastened to a fixed part of the vehicle body,

a buckle at the other end of the buckle section with a lug portion,

a single twisted strand connected between said anchor element and said lug portion of the buckle, said twisted strand being formed by connecting said anchor element and the lug portion of said buckle with plastic threads and thereafter twisting the threads together about the longitudinal axis thereof by rotating said anchor element relative to the lug portion of said buckle, and

a solid plastic enclosure integrally formed around said anchor element, twisted strand and lug portion.

4,119,345

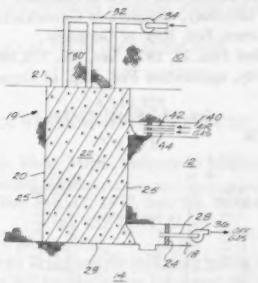
IN SITU OIL SHALE RETORTING PROCESS USING INTRODUCTION OF GAS AT AN INTERMEDIATE LOCATION

William J. Bartel; Robert S. Burton, III, both of Grand Junction, Colo., and Chang Yul Cha, Bakersfield, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation-in-part of Ser. No. 737,154, Oct. 29, 1976, abandoned, which is a continuation of Ser. No. 683,037, May 4, 1976, abandoned, which is a continuation of Ser. No. 615,043, Sep. 19, 1975, abandoned, which is a continuation of Ser. No. 492,768, Jul. 29, 1974, abandoned. This application Apr. 4, 1977, Ser. No. 784,033

Int. Cl.[2] E21B *43/24, 43/26;* E21C *41/10*

U.S. Cl. 299—2 **16 Claims**



1. The method of recovering oil from oil shale in situ comprising: mining a first tunnel substantially horizontally in a subterranean formation containing oil shale, mining a chamber in the formation extending above the tunnel, blasting formation adjacent the chamber to form a cavity in the formation filled with a fragmented permeable mass of formation particles containing oil shale, igniting oil shale at an intermediate level between the top and the bottom of the cavity, introducing an

oxygen containing gas at the intermediate level to sustain combustion of the oil shale and for retorting oil shale between the intermediate level and the bottom of the cavity, thereby leaving uncombusted oil shale in the cavity between the intermediate level and the top of the cavity, and withdrawing gases from the bottom of the cavity.

4,119,346

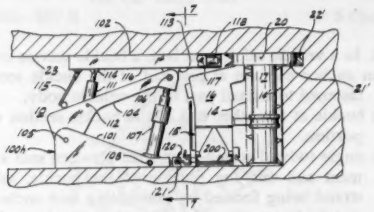
LONGWALL MINING SYSTEM

Michael J. Amoroso, Marion, Ill., assignor to M.A.T. Industries, Inc., West Frankfort, Ill.

Filed May 2, 1977, Ser. No. 792,974

Int. Cl.² E21C *27/24*; E21D *23/00*

U.S. Cl. 299—11 **14 Claims**



11. A method of supporting a roof during a continuous mining operation comprising the steps of:

(a) laying an articulated conveyor adjacent the longwall face,

(b) supporting the roof adjacent the longwall by a plurality of extensible roof supports,

(c) cutting the longwall face with a continuous mining machine traveling lengthwise on the articulated conveyor,

(d) extending the roof support beyond the newly cut longwall face and into supporting engagement with the longwall after the machine has passed and unassisted by support from the machine so that the longwall assists in supporting the roof and substantially reduces the load concentration on the mine floor, and

(e) progressively relocating the conveyor sections into closer adjacency with the newly cut longwall face when the machine has passed.

4,119,347

COAL PLOUGH HAVING SEPARATELY ADJUSTABLE CUTTERS AND FLEXIBLE FLUID POWER AND CONTROL LINES THEREFOR

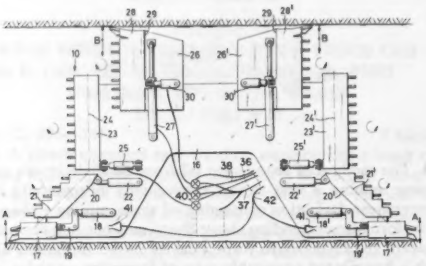
Gerhard Merten, Lunen, and Horst Schlusener, Werne, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 770,496

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 2607100

Int. Cl.² E21C *27/32*

U.S. Cl. 299—34 **2 Claims**



1. A coal plough adapted to be moved back and forth along a coal face to win coal therefrom; said plough comprising, in combination:

(a) a body member mounting a plurality of adjustable cutting tool carriers thereon;

(b) a plurality of hydraulically-operated double-acting piston and cylinder units for adjusting said cutting tool carriers;

(c) a composite flexible hose including:

(i) a pressure conduit for conveying pressurized fluid to drive selected piston and cylinder units;

(ii) control lines for conveying remotely-initiated control signals, and

(iii) a water supply conduit;

(d) a plurality of control valves responsive to said control signals for connecting selected working chambers of the units to said pressure conduit to operate selected ones of said units, and

(e) a plurality of water-spray nozzles for spraying water supplied by the water conduit at the coal face when the plough is operating.

4,119,348

LOOPED CABLE CONTROL DEVICE

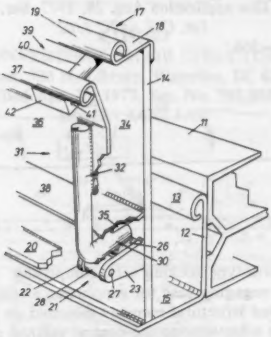
Brian Matthew Curtis, Chesterfield, England, assignor to Perard Engineering Limited, Ripley, England

Filed Feb. 16, 1977, Ser. No. 769,178

Claims priority, application United Kingdom, Feb. 20, 1976, 06707/76

Int. Cl.² E21C *35/20*

U.S. Cl. 299—43 **4 Claims**

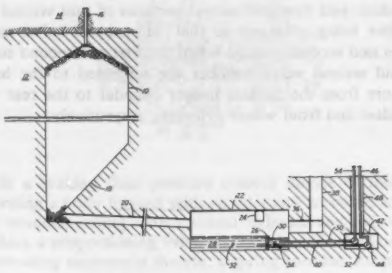


1. A looped cable control device for controlling a looped cable used to supply power or water to a mineral winning machine, which traverses along a mineral face, the device comprising an elongate wall, a plurality of longitudinally spaced legs secured to said wall for supporting the wall, each leg having an upright portion joined to the wall and an arm portion projecting substantially perpendicularly to the upright portion, mounting means for mounting said wall on a spill plate, pivot means pivotally mounting each of said legs on the mounting means, whereby, in use, a trough is defined between said wall and the spill plate, for receiving the looped cable, and said wall is pivotally movable in a direction transverse to the spill plate, stop means for limiting said pivotal movement away from the spill plate, and resilient means biasing the body into cooperation with the stop means and resiliently resisting said pivotal movement towards the spill plate, said arm portions of the legs being constrained between said stop means and said resilient means.

4,119,349
METHOD AND APPARATUS FOR RECOVERY OF FLUIDS PRODUCED IN IN-SITU RETORTING OF OIL SHALE

Peter Albulescu, Caldwell, and Joseph F. McMahon, Clinton, both of N.J., assignors to Gulf Oil Corporation, Pittsburgh, Pa. and Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 25, 1977, Ser. No. 844,629
Int. Cl.[2] E21B *43/24*; E21C *41/10*
U.S. Cl. 299—2 **9 Claims**



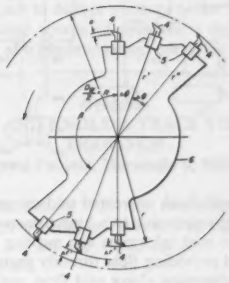
1. A method for the recovery of products from the retorting of oil shale in an in-situ retort comprising:
(a) passing products from the retort through a production drift into an underground separator of large cross section located no higher than the lower end of the retort;
(b) delivering liquids entering the separating chamber from the production drift into a first sump adjacent the inlet end of the separating chamber;
(c) decanting shale oil from the first sump into a second sump;
(d) discharging gases from the end of the separating chamber remote from the production drift and delivering said gases through a shaft to the surface;
(e) withdrawing aqueous liquids from the first sump and pumping said liquids to the surface; and
(f) withdrawing shale oil from the second sump and pumping said shale oil separately from the aqueous liquids to the surface.

4. Apparatus for the delivery of products discharged from an in-situ retort for the retorting of oil shale comprising:
(a) an underground separating chamber at substantially the level of the bottom of the in-situ retort;
(b) a production drift from the lower end of the in-situ retort to the inlet end of the separating chamber;
(c) a first sump in the separating chamber adjacent the inlet end thereof;
(d) a second sump in the separating chamber adjacent the outlet end thereof;
(e) a weir separating the first sump and second sump;
(f) a duct opening into the separating chamber at the outlet end thereof and extending upwardly to the surface for the delivery of gases;
(g) aqueous liquid pumping means adapted to withdraw aqueous liquids from below the liquid surface in the first sump and deliver the aqueous liquids to surface; and
(h) oil pumping means constructed and arranged to withdraw shale oil from the second sump and deliver it separately from the aqueous liquids to the surface.

4,119,350
CUTTER DRUM

Rolf Sander, Essen, and Klaus Oberste-Beulmann, Sprockhovel, both of Fed. Rep. of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H., Bochum and Bergwerksverband, G.m.b.H., Essen, both of, Fed. Rep. of Germany

Filed May 12, 1977, Ser. No. 796,344
Claims priority, application Fed. Rep. of Germany, May 13, 1976, 2621261
Int. Cl.[2] E21C *25/10*
U.S. Cl. 299—87 **3 Claims**



1. A screw-type cutter drum for mining machines having a cylindrical body portion with helical ribs thereon, a plurality of cutter picks carried on said ribs, and a plurality of cutter picks carried on the end of said body portion and positioned in a common plane perpendicular to the axis of the body portion, said last-mentioned cutter picks being disposed in sets corresponding in number and position to said ribs, and the cutter picks in each set being equally spaced angularly from each other and placed at decreasing radial distances from the axis of the body portion, the difference in radius between adjacent picks being constant and given by

$$\Delta r = \frac{1}{z-1}\left[\frac{10^3 V_M}{4n_W}\cdot\frac{\beta}{90^\circ} - a\right]$$

where:
Z = the number of cutter picks per set;
V_M = the transverse speed of advance of the drum;
n_W = the rotational speed of the drum;
β = the angle between adjacent cutter picks of different sets; and
a = the depth of cut of each cutter pick.

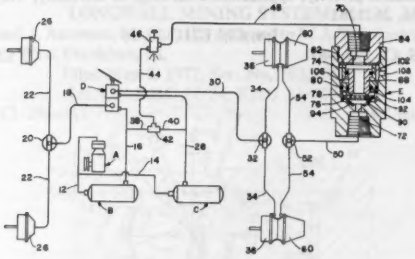
4,119,351
AIR BRAKE SYSTEM WITH PRESSURE HOLDING VALVE

Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 17, 1977, Ser. No. 769,548
Int. Cl.[2] B60T *15/20*
U.S. Cl. 303—6 M **3 Claims**

1. A vehicle air brake system including spring set air released parking brakes, air supply means for supplying air at a predetermined pressure to said parking brakes for releasing same, a pressure holding valve interposed between said air supply means and said parking brakes for maintaining air in said parking brakes at said predetermined pressure when said air supply means falls to operational pressures above atmospheric pressure and below said predetermined pressure, said pressure holding valve being operative to exhaust said predetermined pressure from said parking brakes when said air supply means falls below said operational pressures, said pressure holding

valve including inlet and delivery ports having a check valve interposed therebetween for normally providing flow directly therepast along a flow path from said inlet port to said delivery port and blocking reverse flow, a movable hollow piston between said inlet and delivery ports, said piston having one end normally engaging said check valve and said check valve being yieldably biased against said one end, said flow path including



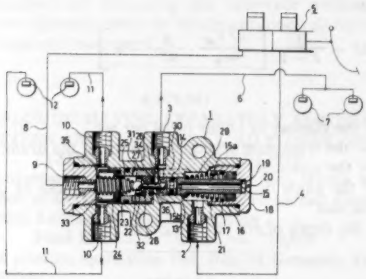
flow between said check valve and said one end of said piston, said piston being responsive to a high pressure drop from said delivery port to said inlet port for moving away from said check valve and providing flow directly past said check valve in an opposite direction along said flow path, axially-spaced seals around said piston, and an atmospheric vent port between said seals.

4,119,352

HYDRAULIC BRAKING PRESSURE CONTROL UNIT

Naosuke Masuda, Higashi-Matsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1977, Ser. No. 825,026
Claims priority, application Japan, Nov. 22, 1976, 51/140554
Int. Cl.[2] B60T *8/26*
U.S. Cl. 303—6 C **5 Claims**



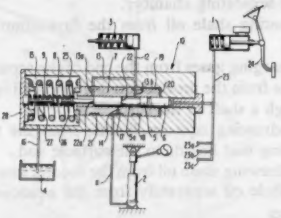
1. In an hydraulic braking pressure control unit for use in the braking system of a vehicle which braking system includes a tandem master cylinder, front wheel cylinders and rear wheel cylinders, said control unit arranged to be positioned between the tandem master cylinder and the rear wheel cylinders, said control unit including a body having a bore therein forming a first flow passage with a valve seat therein and the first flow passage providing communication between the tandem master cylinder and the rear wheel cylinders, a first valve member located in said flow passages and displaceable relative to said valve seat in said first flow passage so that when said first valve member contacts said valve seat it closes said first flow passage and when said first valve member is spaced from said valve seat it opens said first flow passage, wherein the improvement comprises a proportioning valve located in said first flow passage in contact with said first valve member and cooperating with said first valve member for reducing the braking pressure to the rear wheel cylinders at a predetermined rate compared to the braking pressures applied from the tandem master cylinder, said first flow passage including a first part upstream from said proportioning valve and a second part downstream from said proportioning valve, a second flow passage within said body interconnecting the first part and second part of said first flow passage and bypassing said proportioning valve, a second valve member displaceably located within said body for opening and closing said second flow passage, said second valve member having a first surface arranged to be exposed to the braking pressures supplied from the tandem master cylinder to the rear wheel cylinders and a second surface arranged to be exposed to the braking pressures supplied from the tandem master cylinder to the front wheel cylinders, said first and second surfaces of said second valve member being arranged so that said second valve member closes said second passage when the first and second surfaces of said second valve member are subjected to the braking pressure from the tandem master cylinder to the rear wheel cylinders and front wheel cylinders, respectively.

4,119,353

LOAD-DEPENDENT FOUR-CIRCUIT BRAKE SYSTEM ESPECIALLY FOR COMMERCIAL VEHICLES

Eugen Bihlmaier, Winnenden, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed May 13, 1977, Ser. No. 796,534
Claims priority, application Fed. Rep. of Germany, May 20, 1976, 2622534
Int. Cl.[2] B60T *8/20*
U.S. Cl. 303—22 R **16 Claims**

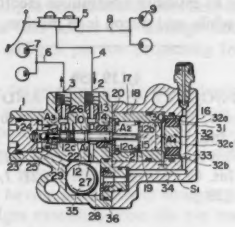


1. A load-dependent four-circuit brake installation, which comprises hydropneumatic spring means including spring leg means, brake cylinder means, and a brake pedal-operated fluid source for actuating the brake installation, characterized in that the brake cylinder means is exclusively operative by pressure from the spring leg means, each spring leg means of the hydropneumatic spring system includes a fluid connection to a brake pressure regulating valve means, said brake pressure regulating valve means including a relief valve slide member with groove means therein for connecting the fluid in said spring leg means with the brake cylinder means and further including line means for connecting the fluid from the brake pedal-operated fluid source with the relief valve slide member, said relief valve slide member being operable in a predetermined position of the relief valve slide member to allow application of a portion of the fluid pressure prevailing in the spring leg means through said groove means to said brake cylinder means corresponding to the fluid pressure acting on said relief valve slide member in response to brake pedal operation.

4,119,354
HYDRAULIC BRAKE CONTROL ASSEMBLY

Naosuke Masuda, and Nobuo Sunaga, both of Higashi-Matsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1977, Ser. No. 834,028
Claims priority, application Japan, Sep. 18, 1976, 51-112267
Int. Cl.[2] B60T *8/14*
U.S. Cl. 303—24 F 4 Claims



1. In a braking fluid pressure control device of the type comprising a body formed with an inlet and an outlet respectively communicating with a master cylinder and rear wheel cylinders, a proportioning valve contained within the body for reciprocating movement therein, a spring member for biasing said proportioning valve towards its non-operative position to allow communication of said inlet with said outlet, said proportioning valve acting against said spring member due to increasing brake fluid pressure to reduce at a predetermined rate the braking fluid pressure supplied from said master cylinder to said rear wheel cylinders, the improvement comprising:

a disc valve operative when actuated to stop reciprocating movement of said proportioning valve, said disc valve being disposed within said body in spaced relation to said proportioning valve, said disc valve being deformable under fluid pressure supplied to a chamber within said body which communicates through a passage with said master cylinder, actuation of said disc valve by said deformation causing said proportioning valve to move to its non-operative position,

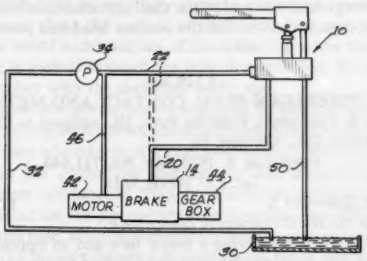
a transmission member interposed between said disc valve and said proportioning valve, and

an inertia ball interposed in said passage for blocking said passage when deceleration exceeds a predetermined level to prevent further actuation of said disc valve.

4,119,355
AUXILIARY RELEASE APPARATUS FOR A HYDRAULIC PRESSURE RELEASABLE BRAKE

Charles A. Kreitner, Benton Harbor, Mich., assignor to Lambert Brake Corporation, St. Joseph, Mich.

Filed Aug. 26, 1977, Ser. No. 827,896
Int. Cl.[2] B60T *15/16*
U.S. Cl. 303—85 10 Claims

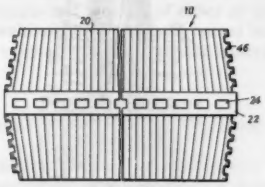


1. In combination with a normally activated hydraulic pressure releasable brake having a principal source of hydraulic pressure: an auxiliary source of hydraulic pressure, a first valve means resposive to said principal source and to said auxiliary source and coupled with said brake for allowing said auxiliary source to feed the brake and simultaneously disconnecting said principal source from the brake when the principal source is not delivering pressure to the first valve means and for disconnecting the auxiliary source of pressure from the brake and allowing the principal source of pressure to feed the brake when the principal source of pressure is delivering pressure to the first valve means and the auxiliary source is not delivering pressure thereto, and relief valve means responsive to said principal source of pressure for relieving said auxiliary source of pressure so as not to deliver pressure to the first valve means when said principal source of pressure is delivering fluid to said relief valve at a predetermined minimum pressure.

4,119,356
VEHICLE AND ENDLESS TRACK STRUCTURE THEREFOR

Jorma Toivo Tapani Pohjola, Haravatie 6, 90530 Oulu 53, Finland

Filed Feb. 6, 1976, Ser. No. 656,069
Claims priority, application Finland, Feb. 10, 1975, 750359
Int. Cl.[2] B62D *55/24*
U.S. Cl. 305—35 EB 14 Claims

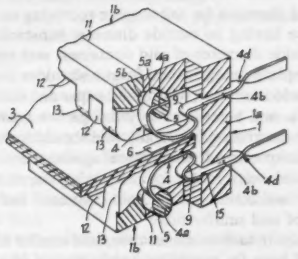


11. For use in a vehicle, and endless ground-engaging track means having elastic, stretchable and contractable opposed side edge regions which in an unstressed condition of said endless track means are shorter than the length of said opposed side edge regions when said endless track means is mounted on the vehicle, and said endless track means having an elongated central region situated between said opposed side edge regions and being longer than the same when said endless track means is in said unstressed condition.

4,119,357
CONNECTOR FOR PRINTED CIRCUIT BOARDS

Francois Robert Bonhomme, 6, Parc de Bearn, 92210 Saint Cloud, France

Filed Jul. 1, 1976, Ser. No. 701,648
Int. Cl.[2] H01R *13/62;* H05K *1/07*
U.S. Cl. 339—75 MP 14 Claims



1. A connector including a contact member, said contact

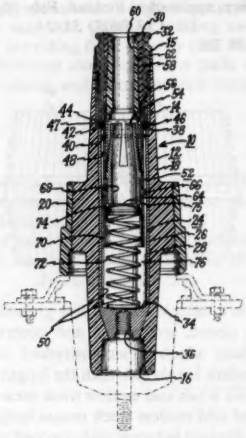
member consisting of two differentially resilient portions, and an intermediate active portion, means for capturing the ends of said portions, means for actuating by rotation the less resilient one of said portions to effect in sequence, a linear engagement between the active portion of said contact member and a confronting conducting track, a resilient deformation of said resilient portions into a surface engagement between said portions and the confronting conducting track and an accompanying sliding action between the deformed resilient portion which then constitute the active portion and the confronting conducting track surface which is slidingly wiped as rotation of said less resilient portion is progressively effected.

4,119,358

ELECTRICAL CONNECTOR SWITCHING MODULE

Henry N. Tachick, Blairstown, N.J.; Reginald S. Arnold, Pittsfield, Mass.; James E. Belcher, Dalton, Mass., and Joseph A. St. Jacques, Ashford, Mass., assignors to General Electric Company, Philadelphia, Pa.

Filed Dec. 17, 1976, Ser. No. 751,692
Int. Cl.[2] H01R *13/52*
U.S. Cl. 339—111 **13 Claims**



1. An electrical power cable separable connector module, comprising:

an insulating housing having an elongated receiving passageway therein, and

a switch insert closely fitted in said passageway, said insert comprising:

a rigid conductive container tube having an outer open end, an inner closed end, a major axial portion of uniform diameter, and a configuration such that the diameter does not increase from said open end to said closed end, that portion of said container near said open end having an expanded diameter for telescoping receiving an insulating nosepiece having an outside diameter substantially equal to the inside diameter of said container, said inner end of said nosepiece being spaced from a shoulder in the inside wall of said container where said expanded diameter portion ends, and a resilient toroidal gasket member being seated in the groove formed by said shoulder and said end of said nosepiece to resiliently seal against the outer perimeter of said snuffer tube for preventing the escape of gas between said inside wall of said container and the outer surface of said snuffer tube;

a snuffer tube in said container tube, said snuffer tube having a central bore for receiving a rod contact of a matching connector module and having inside said bore a layer of ablative material;

a bore contact member adjacent said inner end of said container tube, said contact member comprising a gas port;

a piston fixed to said contact member and adapted for driving said contact member along the axis of said container tube toward said outer end of said container tube in response to gas generated by arcing in said bore, said piston being keyed to said container to prevent it from rotation in said container, and

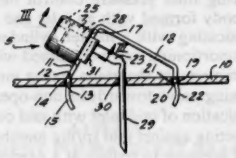
resiliently sliding contact member fixed to said piston and pressing outwardly against the inside wall of said container tube to establish continuous electrical contact with said wall while said piston is in motion.

4,119,359

PHONO-SOCKET ASSEMBLY AND METHOD

Ronald L. Schultz, Northfield, Ill., assignor to Stanford Applied Engineering, Inc., Santa Clara, Calif.

Filed Aug. 25, 1977, Ser. No. 827,447
Int. Cl.[2] H01R *17/06;* H02B *1/02*
U.S. Cl. 339—128 **18 Claims**



1. A phono-socket assembly adapted to receive a phono-plug in electrical connection therewith, and comprising:

a stamped and drawn thin sheet metal grounding shell having retainer means at one end of the shell and mounting bracket means on the opposite end of the shell for mounting of the assembly on a support;

an elongate tubular contact having a phono-plug pin receiving head end portion of substantially smaller diameter than said shell and mounted within said shell on annular insulating means, and the contact having a terminal portion extending from said head end portion and projecting beyond said opposite end of the shell;

said annular insulating means having an end retainingly engaged with said retainer means and an opposite end at said opposite end of said shell; and

retaining fingers extending generally radially inwardly from said opposite end of said shell and having retaining tips turned toward and into generally endwise thrusting retaining engagement with said opposite end of said annular insulating means and substantially spaced from said contact whereby to retain the insulating means in assembled relation within the shell in cooperation with said retainer means and thereby maintaining said head end portion of the contact in position within said shell to receive a phono-plug pin by introduction of the pin through said one end of the shell into electrically contacting engagement within the contact head end portion.

4,119,360

A.C. INTERLOCK PLUG, CONTACT AND METHOD

Stanley A. Linkowski, Franklin Park, Ill., assignor to Chromalloy Alcon, Inc., Chicago, Ill.

Filed Aug. 4, 1976, Ser. No. 711,440
Int. Cl.[2] H01R *9/16*
U.S. Cl. 339—217 S **11 Claims**

1. An electrical connector comprising:

a dielectric body having a major face and an opposite face and a contact member mounting passage hole of slot-like form in transverse cross section with narrowly spaced opposite surfaces and substantially spaced apart longitudi-

nal edges, the hole extending through said body and opening from both faces of the body;

an electrically conductive contact member having an elongate pin portion and a solder lug of substantial length extending from one end of said pin portion;

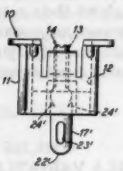
said solder lug being in pushed assembly with said body and extending through said hole from said major face and projecting from said opposite face of the body;

said pin portion having shoulder means at its said one end and said body having a shoulder at said major face, said shoulders being in confrontation and limiting the extent of projection of said solder lug through said opening and maintaining said pin portion projecting from said major face;

said solder lug being substantially complementary in transverse cross section to said slot-like hole and thus thin between opposite broad surfaces of the solder lug but of substantial width between longitudinal side edges of the solder lug;

said solder lug having substantially straight parallel longitudinal side edges extending from the pin end of the solder lug toward the free end of the solder lug;

shear formed retention spur projections of substantially triangular shape formed in said solder lug entirely within said longitudinal substantially straight side edges, each of said spur projections having a sharp tip point spaced from



said pin portion shoulder and extending generally in the same direction as said pin portion projects from said solder lug;

each of said spur projections being partially separated from the solder lug along a shear line extending away from said shoulder means diagonally inwardly from the longitudinal substantially straight side edge within which the spur projection is formed;

each of the spur projections being deflected from the normal cross section of the solder lug and generally diagonally across the plane of one of the broad width surfaces of the solder lug whereby the spur projections remain inside said longitudinal substantially straight edges and are adapted to cam along the surface of said hole which opposes said one broad width surface of the solder lug when the solder lug is pushed through the hole in assembling the contact member with the dielectric body; and

said spur projection points engaging in positive retaining, anchoring relation with said opposing dielectric body hole surface whereby to dig into said surface of the hole and hold the solder lug and thereby the contact member against withdrawal from the dielectric body by forces exerted on the pin portion in a direction away from said major face, while said shoulders provide positive retention of the contact member in position on the dielectric body against forces acting on the pin portion toward said major face.

4,119,361

MULTILAYER IDENTIFICATION CARD

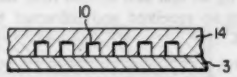
David Leslie Greenaway, Birchwil, Switzerland, assignor to Landis & Gyr, Zug, Switzerland

Filed Aug. 9, 1976, Ser. No. 712,750

Claims priority, application Switzerland, Aug. 14, 1975, 10601/75

Int. Cl.[2] G09F *3/02*

U.S. Cl. 350—1.1 **6 Claims**



1. A card for storing information for optical reading comprising:

optical marking means indicative of said information;

a protective layer on each side of said optical marking means, both of said layers being opaque to light of shorter wavelength than infrared light and at least one of said protective layers being penetratable by infrared light;

said optical marking means being provided at the inner face of one of said protective layers and having a cellular surface structure with at least 300 lines per mm to inhibit photographic copying of said information with the use of infrared light; and

said protective layers being so connected to said optical marking means that removal of either of said protective layers therefrom will destroy said optical marking means to inhibit copying or viewing of said information.

4,119,362

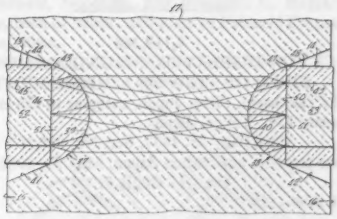
OPTICAL FIBER CONNECTOR UTILIZING OPPOSED LENSES

Melvyn A. Holzman, Boulder, Colo., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Continuation-in-part of Ser. No. 635,806, Nov. 28, 1975, abandoned. This application Feb. 11, 1977, Ser. No. 767,692

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.18 **57 Claims**



1. A device for interconnecting a duality of substantially cylindrical optical fibers comprising,

means defining a cavity having a tapered surface a portion of which comprises

an objective lens,

means for positioning an optical fiber unit having an outer surface, an end surface, and a corner between said end surface and said outer surface, said means for positioning including means for pressing said corner against said tapered surface for aligning the axis of said fiber unit and the axis of said cavity so that light emitted from said optical fiber unit is received and refracted by said objective lens,

a light-transmissive means for transmitting light so refracted by said objective lens,

means defining a second cavity having a tapered surface a portion of which comprises

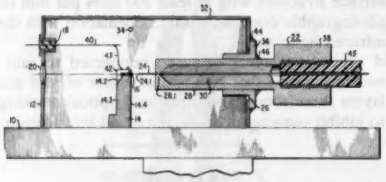
an immersion lens for receiving and refracting said light from said light-transmissive means, and means for positioning a second optical fiber unit having an outer surface, an end surface, and a corner between said end surface and said outer surface, said second means for positioning including means for pressing said corner of said second fiber unit against said tapered surface of said second cavity for aligning the axis of said second fiber unit and the axis of said second cavity so that said second fiber unit can receive said light so received and refracted by said immersion lens.

4,119,363

PACKAGE FOR OPTICAL DEVICES INCLUDING OPTICAL FIBER-TO-METAL HERMETIC SEAL

Irfan Camlibel, Stirling, and Theodore Charles Rich, Branchburg, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 18, 1976, Ser. No. 667,961
Int. Cl.[2] G02B *5/14*; H01L *33/00*
U.S. Cl. 350—96.20 **15 Claims**



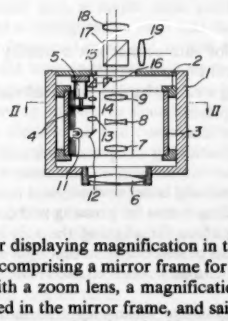
1. A hermetic seal comprising:
a metal tube wherein one end of the tube has a neck portion forming a narrow diameter opening,
a bare optical fiber extending axially through the tube and forming an annular space therebetween, the fiber being centered by the neck portion, and
solder means filling the annular space between the tube and fiber and being confined by the neck portion.

4,119,364

DEVICE FOR DISPLAYING MAGNIFICATION IN THE FIELD OF VIEW OF A MICROSCOPE

Naoyuki Takahashi, Hino, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed May 25, 1977, Ser. No. 800,307
Claims priority, application Japan, May 25, 1976, 51-67753
Int. Cl.[2] G02B *21/06*
U.S. Cl. 350—114 **3 Claims**



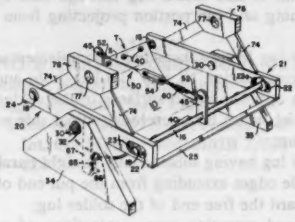
1. A device for displaying magnification in the field of view of a microscope comprising a mirror frame for the microscope incorporating with a zoom lens, a magnification display plate rotatably arranged in the mirror frame, and said magnification display plate being rotated by interlocking with movement of the zoom lens to vary magnification, whereby a predetermined magnification on the magnification display plate is displayed in the field of view of observation optical system, photographing optical system or the like.

4,119,365

TROUGH REFLECTOR

Roger Andrew Powell, 1455 Whitwood Dr., Norristown, Pa. 19401

Filed Apr. 30, 1976, Ser. No. 682,109
Int. Cl.[2] G02B *5/10*
U.S. Cl. 350—293 **20 Claims**



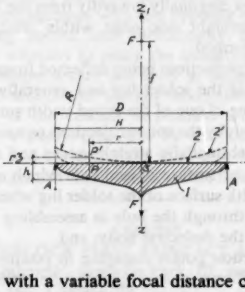
4. A trough reflector comprising a flexible planar member having a reflective surface, a pair of spaced parallel elongated members for supporting said planar member therebetween, said elongated members being disposed in a common plane, means rigidly connecting said planar member with said elongated members, means for rotatably mounting said elongated members for rotation substantially about their respective longitudinal axes, means for rotating said elongated members in opposite directions about their respective longitudinal rotational axes, to predetermined positions at which said planar member assumes a substantially cylindrical shape, and means for maintaining said elongated members in said predetermined positions.

4,119,366

MIRRORS WITH A VARIABLE FOCAL DISTANCE

Gerard R. Lemaitre, Aix-en-Provence, France, assignor to Agence Nationale de Valorisation de la Recherche- A.N.-V.A.R., France

Filed Dec. 2, 1976, Ser. No. 746,792
Claims priority, application France, Mar. 5, 1976, 76 07577
Int. Cl.[2] G02B *5/10*
U.S. Cl. 350—295 **5 Claims**



1. Mirror with a variable focal distance comprising a blank of a flexible material, of revolution about an axis, in the general form of a disc having a reflective face which has been surfaced with high precision and a rear face, opposite to said reflective face; an external radius H and a thickness h between said two faces which depends on the distance r to said axis, which disc is elastically bent by means of a variable pressure applied uniformly on one face which pressure is balanced by the reaction force of a peripheral support on which said disc bears and

the reduced thickness h/H of said disc is defined at each point of said disc placed at a reduced distance $\rho = r/H$ from said axis by the formula

$$\frac{h}{H} = [\,12\,(1-\nu)\Omega\,\frac{p}{E}\,]^{\frac{1}{3}} \cdot (1-\rho 2)\,\frac{1}{3}$$

in which E and ν are respectively Young's modulus and Poisson's ratio of the material of the blank, Ω is the so-called closure coefficient of the bent mirror, p is the uniform load per unit of surface of the disc for bending said disc, and $\rho = r/H$ is the reduced distance of the point from the axis and is included between 0 and 1, said blank comprising a crown forming one piece with the disc to which it is connected by a very thin cylindrical flange which forms said peripheral support, which crown is hermetically connected to a base so that the disc, the crown and the base form a tight enclosure, which enclosure comprises means for creating in the enclosure a variable pressure, different from ambiant pressure.

4,119,367

LIQUID CRYSTAL DISPLAYS

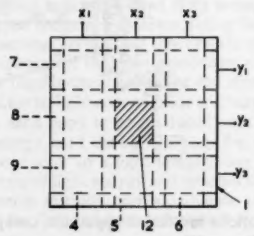
Edward Peter Raynes, 2, Weyburn Close, Lower Wick, Worcester, County of Hereford and Worcester; Ian Alexander Shanks, 68, Lower Wyche Rd., Malvern, County of Hereford, and Worcester, both of England, and John Charles Varney, 24, Wellpark Ter., Neilston, Glasgow, Scotland

Filed Mar. 3, 1976, Ser. No. 663,360

Claims priority, application United Kingdom, Mar. 6, 1975, 9441/75

Int. Cl.² G02F *1/13*

U.S. Cl. 350—333 **6 Claims**



1. A method of addressing a matrix liquid crystal display which comprises a layer of liquid crystal material contained between a first and a second slide at lease one of which is transparent, said first slide having a first set of transparent strip electrodes, said second slide having a second set of transparent strip electrodes, the two sets of electrodes being arranged to form a matrix of electrode intersections, said method comprising

applying a blanking voltage across a plurality of active areas of liquid crystal to change them to their on state;

applying a first of a two phase voltage supply source which supplies two sinusoidal waveforms 60° apart in phase to an electrode in both sets of electrodes at an electrode intersection which is to be turned from an on to an off state;

applying the second of said sinusoidal waveforms to the remaining first set of electrodes, and applying a zero voltage to the remaining second set of electrodes, whereby the remaining intersections receive a threshold voltage.

4,119,368

ELASTOMER DISPLAY DEVICE

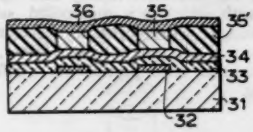
Toru Yamazaki, Sayama, Japan, assignor to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,539

Claims priority, application Japan, Dec. 25, 1975, 50/159497

Int. Cl.² G02F *1/00*

U.S. Cl. 350—360 **6 Claims**



1. An elastomer display device comprising:

(a) a transparent substrate;

(b) a transparent electrically conductive membrane arranged on said transparent substrate according to a pattern to be displayed;

(c) a transparent elastomer coating overlying and in contact with the transparent substrate and also overlying and in contact with the transparent conductive membrane pattern;

(d) a metal reflecting coating overlying and contacting at least portions of the transparent elastomer coating;

(e) a transparent insulating coating in contact with the metal reflecting coating and arranged according to a pattern which overlies the transparent substrate at those portions which are not covered by the transparent electrically conductive membrane pattern to be displayed;

(f) a conductive elastomer coating in contact with the metal reflecting coating and overlying at least the transparent electrically conductive membrane pattern to be displayed;

(g) an electrode layer overlying and in contact with the conductive elastomer coating.

4,119,369

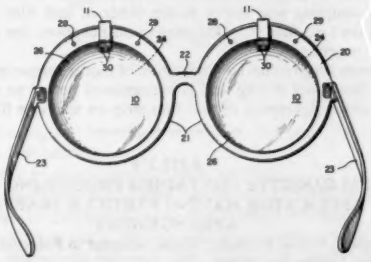
VARIABLE DENSITY OPHTHALMIC DEVICE

Vaito K. Eloranta, Needham, and Benjamin C. Ruggles, Jr., Gloucester, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 27, 1975, Ser. No. 608,401

Int. Cl.² G02C *7/12*

U.S. Cl. 351—49 **7 Claims**



1. An ophthalmic device comprising:

a spectacle frame member adapted to engage first and second pairs of light polarizing elements;

a first pair of light polarizing elements fixedly held by a said frame member;

a second pair of light polarizing elements which are superposed and substantially coextensive with the first pair of light polarizing elements and rotatable with respect to said first pair of light polarizing elements to provide variable

light transmission, said frame member including lips which prevent substantial radial movement of said moveable light polarizing elements; and

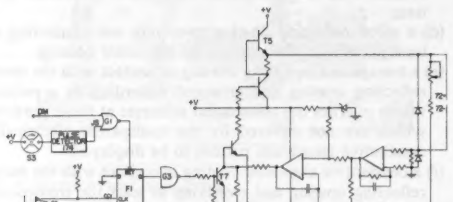
biasing means fixedly attached to each of said rotatable light polarizing elements and in engagement with respective portions of said frame member associated with each fixedly held light polarizing element whereby movement of said biasing means causes rotation of said rotatable light polarizing elements, said biasing means acting to urge each of said rotatable light polarizing elements axially toward the respective fixedly held light polarizing element with which it is superposed, said biasing means comprising a generally U-shaped element comprising first and second legs and a cross-member, said second leg comprising an offset portion which offset is toward said first leg.

4,119,370

SELF-DEVELOPING MOTION PICTURE VIEWER HAVING CONTROLLED FILM IMBIBITION

William A. Holmes, Marblehead, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1977, Ser. No. 790,886
Int. Cl.[2] G03C *11/00*
U.S. Cl. 352—130 **9 Claims**



1. In a photographic projector apparatus for processing to a viewable condition and thereafter projecting images of photographic film strip connected between a pair of spools contained in a film cassette, such apparatus including a drive motor, program means for alternately coupling said motor to each of said spools to advance said film strip in one direction and the other, said program means including means for coupling said one motor to one of said spools for winding said film strip thereon while a processing fluid is deposited on said film strip, and following a predetermined imbibition period for automatically coupling said motor to the other of said film spools to advance said film strip for projection purposes, the improvement comprising:

means for precluding application of motor torque to said one film spool during said predetermined period so as to preclude tightening of said film strip on said one film spool.

4,119,371

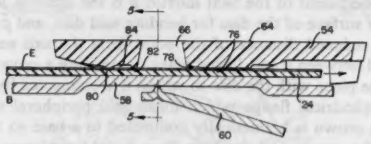
FILM CASSETTE CONTAINED PROCESSING FLUID APPLICATOR HAVING PARTICLE TRAPPING ARRANGEMENT

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1977, Ser. No. 791,136
Int. Cl.[2] G03C *11/00*
U.S. Cl. 352—130 **7 Claims**

1. In a cassette containing a strip of photographic film having a light-sensitive emulsion on one surface thereof and a processing fluid applicator for depositing a layer of processing fluid on a moving run of the film strip after exposure of the emulsion, the applicator including an applicator surface positioned to overlie the moving run of the film strip and having a nozzle opening for conducting processing fluid to the film followed by a doctoring surface as viewed with respect to film strip travel during the moving run to provide a processing fluid layer of a given, substantially uniform thickness on the emulsion, the improvement comprising:

particle trapping means on the applicator surface in leading arrangement to the nozzle opening as viewed with respect to film travel during the moving run to block passage to



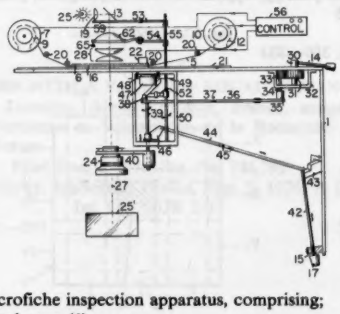
said doctoring surface of particles projecting from the emulsion to a height greater than the thickness of the processing fluid layer, said particle trapping means including at least two scraper blade formations extending transversely across the film strip and spaced apart along the longitudinal axis of the film strip to define a particle receiving channel extending transversely across the film strip.

4,119,372

MICROFICHE INSPECTION APPARATUS

Robert Anthony Morgan, Palo Alto, Calif., assignor to Terminal Data Corporation, Woodland Hills, Calif.

Filed Sep. 23, 1976, Ser. No. 725,825
Int. Cl.[2] G03B *21/22*
U.S. Cl. 353—26 R **8 Claims**



1. A microfiche inspection apparatus, comprising;

(a) an enclosure (**1**),

(b) a viewing screen (**2**) disposed at an angle to the vertical at the front of said enclosure,

(c) illumination means (**4**) surmounting said enclosure and having a downward light path (**27**),

(d) microfiche transport means (**9, 12**) also surmounting said enclosure, to position microfiche (**5**) in said light path,

(e) plural objective lenses (**24, 47**) having significantly differing characteristics,

(f) bi-position, detented, plural, rigid arm means (**35, 36, 38**) to selectively rotate and align one of said objective lenses at a time into said light path at significantly different locations along said light path to form an image of a selected portion of said microfiche upon said viewing screen at significantly different magnifications,

(g) a first selectively positionable condensing lens (**19**) within said illumination means, and

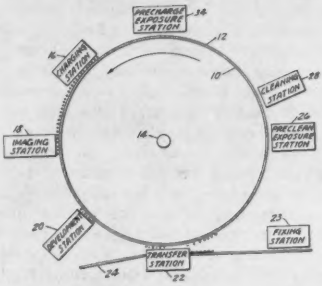
(h) first jointed auxiliary lever means (**53, 59**) connected to said first condensing lens and to said detent arm means (**36, 55**)

to position the same in said light path selectively according to the positioning of said detented arm means.

4,119,373
ELECTROGRAPHIC APPARATUS AND METHOD FOR USING ARSENIC SELENIDE AS THE PHOTOCONDUCTOR

Leslie O. Frishman, St. Paul, and Kerry S. Nelson, Shoreview, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 8, 1976, Ser. No. 664,950
Int. Cl.[2] G03G *15/02*
U.S. Cl. 355—3 R **8 Claims**



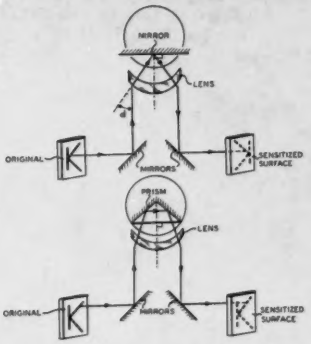
1. An improvement to the method of producing multiple copies of a document using a copy machine having an arsenic selenide photoconductive layer which includes the steps of placing a uniform electrostatic charge on the photoconductor, exposing the charged photoconductor to a light image obtained from the document thereby creating on the surface of the photoconductive layer a differential potential pattern corresponding to the light image, developing the differential potential pattern by the application of toner particles to the photoconductor wherein a development technique is used that is capable of providing uniformly-filled solid areas, transferring the toner developed image to a receptor, fixing the toner to the receptor and removing any residual toner on the photoconductor following exposure of the photoconductor to a pre-clean light source, the improvement including the step of exposing the photoconductor to light energy prior to charging the photoconductor for each copy to be produced, said light energy and the light energy used during the step for exposing the charged photoconductor to a light image being selected and maintained in terms of light energy and spectral distribution to establish the arsenic selenide photoconductor at a stabilized fatigue level for the first and each subsequent copy.

4,119,374
REPROGRAPHIC APPARATUS AND METHOD

Wolfgang Mehl, and Roland Monti, both of Geneva, Switzerland, assignors to Sublistatic Holding S.A., Spielhof, Switzerland

Filed Oct. 19, 1976, Ser. No. 733,725
Claims priority, application Switzerland, Oct. 24, 1975, 13778
Int. Cl.[2] G03B *27/32, 27/70*
U.S. Cl. 355—32 **7 Claims**

1. A reprographic apparatus for color copying an original including an optical system, comprising an objective lens or lenses, for forming on a surface a light image of the original and a device for selectively enabling a right way-round image or an inverted image of such original to be produced on such surface, the device comprising a prism having an isosceles triangle cross section with the base thereof, which is adjacent to the two equal angles, positionable opposite the objective lens or lenses and a mirror having a flat reflective surface alternatively interposable in the light path after the latter has passed through the lens or lenses of the objective of the optical system, said base of the isosceles and the reflective surface of the mirror being positionable at right angles to the axis of the lens or lenses, both the mirror or the prism being interposed in

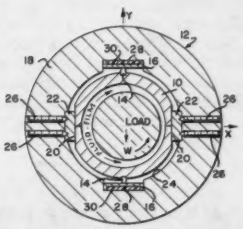


the path of the light image, according to whether a right-way-round or inverted image, respectively, is desired, means for forming on said surface a latent image of said original and means for developing said latent image.

4,119,375
BEARING AND HOUSING ASSEMBLY

Robley Gordon Kirk, and Hanns Hornschuch, both of Easton, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Sep. 1, 1977, Ser. No. 829,812
Int. Cl.[2] F16C *23/00*
U.S. Cl. 308—9 **8 Claims**



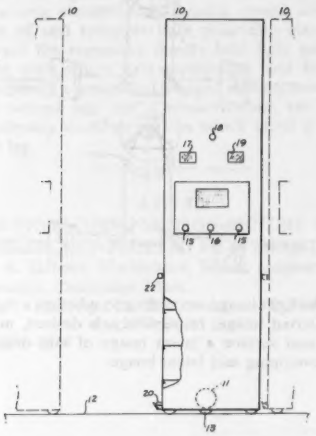
1. A bearing and housing assembly, comprising:
a fluid-film bearing;
a housing in envelopment of said bearing;
means mounting said bearing, within said housing, pivotally on an axis perpendicular to said bearing; wherein
said mounting means includes means accommodating relative movement between said bearing and said housing along said axis; and further including
means interposed between said bearing and said housing, on opposite sides of said bearing, for damping said relative movement; and wherein
said mounting means comprises flexure pads disposed transverse to said axis, on opposite sides of said bearing, and pivot elements interposed between said bearing and said pads in contacting engagement with only intermediate, axis-bisected portions of said pads.

4,119,376

MOVABLE STORAGE UNIT SYSTEM

Ernest P. Moyer, Frederick, Md., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

Filed Nov. 22, 1976, Ser. No. 743,611
Int. Cl.[2] A47B 53/00
U.S. Cl. 312—198 10 Claims



1. In a movable storage unit system, the combination comprising

a plurality of storage units at least some of which are movable toward and away from one another into and out of contact with one another to define an access space between a pair of the units,

means on each movable unit for driving said unit in two directions,

a logic control circuit on each unit,

a pair of reset controls on each unit including a reset control circuit for creating a logic signal when actuated,

a run control on each unit for creating a logic signal when actuated at a storage unit where an access space is desired,

said storage units being electrically connected such that a logic signal from said run control on the storage unit which is to move where an access space is desired directs a run signal to a next adjacent unit to cause said units to be driven successively away from said desired access space,

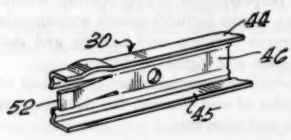
said run signal being inhibited by said reset control circuit unless the reset controls on the storage units on both sides of an open access space are actuated.

4,119,377

SELF-ALIGNING DRAWER SLIDE TAB

Lloyd L. Barber, Santa Ana, and Alan J. Koppelman, Studio City, both of Calif., assignors to Standard Precision, Inc., Santa Fe Springs, Calif.

Filed Jul. 16, 1976, Ser. No. 705,824
Int. Cl.[2] A47B 88/10
U.S. Cl. 312—344 1 Claim



1. Self-aligning means for sliding drawers and associated slide mechanisms, said slide mechanisms having a plurality of slide members juxtapositioned in parallel arrangement, one above the other, wherein each slide member includes rollers secured thereto, one roller being positioned forwardly of one slide member and a second roller being positioned rearwardly of the second slide member to provide longitudinal movement between each slide member; and wherein each roller is arranged to be operably received within respective slide members thereof, said self-aligning means being characterized by:

frictional engaging means formed in one of said slide members and arranged to indirectly engage said other slide member in a releasable manner to prevent lateral movement of said drawer when said drawer is in a closed position and to provide controlled longitudinal movement of said drawer;

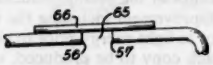
said first slide member being secured to the sides of said drawer for movement therewith, said second slide member being substantially mounted in a stationary manner with respect to said first slide member; and wherein said frictional engaging means is formed adjacent the forward end of said first slide member thereof, whereby said frictional engaging means is arranged to directly releasably engage said roller of said second slide member thereof;

said first slide member including a back wall, and wherein said frictional engaging means comprises an elongated resilient tab member mounted to said back wall thereof adjacent the forward free end of said first slide member, said tab member being bent inwardly thereof for releasable forced engagement with the forward roller of said second slide member thereof; and wherein said tab member is formed as an integral part of said back wall of said first slide member, said tab member being lanced and bent inwardly therefrom.

4,119,378

SEGMENTED GAS DISCHARGE DISPLAY PANEL DEVICE AND METHOD OF MANUFACTURING SAME

George A. Kupsky, State College, Pa., assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 492,991, Jul. 30, 1974, Pat. No. 4,051,404.
This application Jan. 29, 1976, Ser. No. 653,566
The portion of the term of this patent subsequent to Jun. 14, 1994, has been disclaimed.
Int. Cl.[2] H01J 9/38
U.S. Cl. 316—19 13 Claims

1. In a process for making a gas discharge information display panel device in which a pair of rigid members define parallel flat bounderies between which information to be displayed is generated by plural discrete gas discharges between selectively energized electrodes, improvement in the sealing of said information display panel comprising the steps of

A. joining said rigid members in spaced apart relation by a sealing member having the perimetrical shape of said chamber and defining the lateral boundaries thereof, the terminal ends of said member being spaced apart to form a port so that said chamber is in communication with its ambient atmosphere,

B. bridging the spaced ends of said sealing member with a glass plugging member, said plugging member substantially matching the expansion properties of said seal member and having a fiber softening temperature below the fiber softening temperature of said seal member to form a sealable panel assembly,

C. then placing said sealable panel assembly (1) in an ambient environment of a vacuum to remove air, then (2) in an ambient environment of the desired gas filling to fill said chamber with the desired gas filling, and

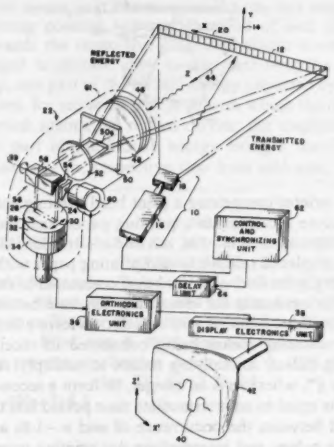
D. then heating said plugging member to a temperature below the fiber softening temperature of said seal member

and above the fiber softening temperature of said plug member to join said plugging member across the spaced terminal ends of said sealing member and to the contiguous wall portions of said rigid members, to thereby seal a predetermined volume of said fill gas in said chamber.

4,119,379
OPTICAL DETECTION AND RANGING APPARATUS

Jerrold Zindler, Cambridge, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sep. 27, 1967, Ser. No. 670,971
Int. Cl.[2] G01C *3/08;* G01B *11/26*
U.S. Cl. 356—4 **19 Claims**



1. Optical detection and ranging apparatus comprising

A. an optical source (**10**) arranged to illuminate an entire field of view simultaneously,

B. means (**22**) arranged to

(1) receive reflections of said optical energy from said field of view and

(2) converge said reflections to a line extending along a first axis, with reflections received from different positions along a first direction in said field of view being positioned on said line at correspondingly different coordinates along said first axis,

C. optical sensing means (**32, 34**) responsive to optical energy in said line, said optical sensing means

(1) having an optically sensitive surface containing said first and second axes; and

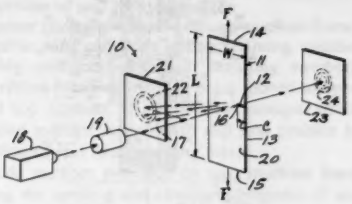
(2) storing an image of the reflections impinging thereon as a result of illumination by said optical source, said stored image providing an indication of the range and position of targets disposed within the field of view, and

D. means (**56**) producing relative movement of said line and said sensing means along a second axis transverse to said axis, whereby reflections of source energy arriving at said receiver means at different times are sensed at correspondingly different coordinates along said second axis.

4,119,380
METHOD FOR DETERMINING STRESS-OPTICAL CONSTANTS OF OPTICALLY ISOTROPIC AND ANISOTROPIC MATERIALS

Demetrios D. Raftopoulos, and Stamatios V. Kartalopoulos, both of Toledo, Ohio, assignors to The University of Toledo, Toledo, Ohio

Filed Jan. 21, 1977, Ser. No. 761,128
Int. Cl.[2] G01B *11/16*
U.S. Cl. 73—800 **3 Claims**



1. A method for determining a stress-optical constant of optically isotropic materials and optically anisotropic materials comprising the steps of:

forming a crack in a flat rectangular material specimen having a predetermined Poisson's ratio and modulus of elasticity, said crack extending from a region at the center of a long edge of said specimen into said specimen a distance sufficient to assure that caustics formed from a constrained region adjacent a crack tip are free from the influence of free surfaces of the specimen;

applying a tensile load to said specimen in a direction perpendicular to said crack;

impinging a collimated monochromatic light beam on the constrained region in said specimen adjacent the crack tip from a direction substantially perpendicular to a flat surface of the specimen and to the load applied to the specimen whereby caustics are transmitted through and reflected from the specimen;

measuring the effective diameters of the transmitted and reflected caustics at locations spaced equal distance from and on either side of the specimen; and

determining a stress-optical constant for the specimen from the measured diameters of the reflected and transmitted caustics and the predetermined Poisson's ratio and modulus of elasticity of the specimen.

4,119,381
INCUBATOR AND RADIOMETRIC SCANNER

Edward Muka, Rochester, and Clyde Pershing Glover, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,873
Int. Cl.[2] G01N *21/22;* G02B *5/14*
U.S. Cl. 356—244 **7 Claims**

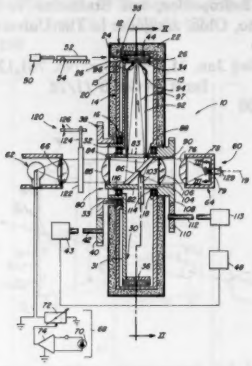
1. Apparatus for radiometric analysis of a substrate requiring controlled temperature conditions to reach a desired measurable state, the apparatus comprising

a plurality of substrate-supporting platforms mounted for rotation around an axis;

temperature control means for maintaining each platform at a desired temperature; and

means positioned on said axis for radiometrically sensing a characteristic of the substrates at said platform, said sensing means including a radiometer having a source of electromagnetic energy and a sensor aligned with said axis, a first reflector positioned to selectively deflect electromagnetic energy from said source to any one of said platforms, a second reflector positioned to reflect read-out energy from said any one platform to said sensor, said reflectors being integrally attached and comprising a two-sided mirror positioned at an angle of approximately 45° with

respect to said axis, and a pair of light pipes, one end of each pipe being positionable adjacent to the space occupied by each of the platforms to receive reflected light



therefrom and the other end of each pipe being positioned to direct light upon said second reflector; said platforms and at least a portion of said sensing means being mounted for rotation about the axis.

4,119,382

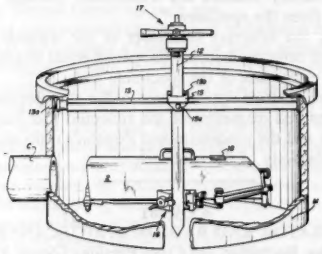
SELF-LEVELING CONSTRUCTION ALIGNMENT LASER

Lyndell J. C. George, and Robert S. Shelly, both of Jacksonville, Ark., assignors to AGL Corporation, Jacksonville, Ark.

Division of Ser. No. 624,238, Oct. 20, 1975, Pat. No. 4,053,238. This application Aug. 30, 1976, Ser. No. 718,611

Int. Cl.[2] G01C *5/02*

U.S. Cl. 356—249 **7 Claims**



1. In a system for projecting and utilizing a light beam as a reference line for construction purposes comprising:

a rectilinear rod supported for rotation about its major rectilinear axis,

a line-of-sight device,

a light beam projecting device enclosed in a housing,

both of said sighting and projecting devices fixed to said rod and spaced apart thereon in a direction parallel to said rod axis, said devices being oriented relative to said rod axis with the line-of-sight of said line-of-sight device and with the center line of the light beam both directed generally transversely to said rod axis and in a common plane parallel to said axis, wherein rotary adjustment of said rod about said axis to bring the line-of-sight device into alignment with a predetermined point causes the projected beam of light to be positioned with its center line in a plane common to said point and to the line-of-sight of said line-of-sight device,

means for angularly adjusting said devices relative to each other in a plane parallel to said rod axis including a clamp assembly removably attached to said light beam projecting device having an opening to accept said rectilinear rod, a hook plate adapted to retain said rod within said clamp assembly, a pivotable wall in said opening for angularly adjusting said light projecting device relative to the rectilinear rod in a plane parallel to said rod axis, and

a light compensator means mounted within said light projection device for intercepting said beam of light and automatically correcting slight deviations of the light beam from true horizontal, said compensator having a liquid-air interface always parallel to the true horizontal to provide compensation.

4,119,383

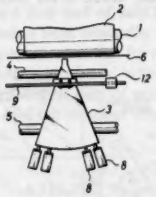
METHOD AND APPARATUS FOR INSERTING INTERMEDIATE DOTS IN A DOT MATRIX USING A DOT PRINTER

Akinori Watanabe, and Katsumasa Shinozuka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1976, Ser. No. 706,961

Int. Cl.[2] B41J *3/12, 19/30*

U.S. Cl. 400—124 **17 Claims**



4. A dot printer comprising a print head printing sequential dots at discrete locations on a printing paper, said sequential dots being identified as $n-1$th, nth and $n+1$th dots said print head being displaced relative to said printing paper with means for producing print timing pulses being connected to said print head, measuring means for measuring the time between the printing of said $n-1$-th and said n-th dot, to form a first quantity, said measuring means being connected to receive said print timing pulses, multiplying means to multiply said first quantity by $\frac{1}{2}^m$, where m is an integer, to form a second quantity which is equal to an intermediate time period less than the time period between the occurrence of said $n-1$-th and n-th print timing pulses, and intermediate dot printing means connected to said multiplying means to cause a dot to be printed at said intermediate time period after the printing of said n-th dot and before said $n+1$-th dot, whereby between two sequential dots, the first being called $n-1$ and the second n, a time quantity is determined which later controls printing of an intermediate dot between the next sequential dots, said next sequential dots being n and the next $n+1$.

4,119,384

TYPING DEVICE INCLUDING A TYPE DISC

Alfred Keiter, Wilhelmshaven, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Dec. 1, 1977, Ser. No. 856,735

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658123

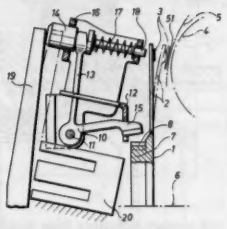
Int. Cl.[2] B41J *1/30*

U.S. Cl. 400—144.2 **5 Claims**

1. In a typing device having a platen for supporting a record carrier; a type disc including a plurality of bars each carrying a character; the disc being rotatable about an axis through predetermined angles for successively setting selected characters in a printing position; a hammer for impacting the bar of the selected character for pressing the selected character against the record carrier; and drive means for actuating the hammer; the improvement comprising

(a) a plurality of stops provided on said type disc; each said stop being assigned to a separate one of said characters; said stops being arranged at least at two different distances from said axis dependent upon the printing surface area of the associated character;

(b) an elastic lever having a first end and a second end and being movable to effect an abutting engagement of said first end with the stop of the associated character situated in the printing positon; and



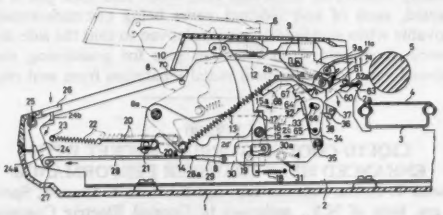
(c) coupling means connecting said second end of said elastic lever to said hammer for simultaneously moving, by said drive means, said hammer towards the bar situated in the printing position and said first end of said elastic lever towards the respective stop; said elastic lever being arranged to absorb, upon engagement with the respective stop, one part of the kinetic energy imparted by said drive means, for reducing the force with which the character is pressed against the record carrier; the magnitude of said one part of the kinetic energy being a function of the distance of the respective stop from said axis.

4,119,385

RIBBON CHANGING MECHANISM FOR A TYPEWRITER

Tomoyoshi Watanabe; Tsuneo Yasui, both of Chiryu; Shigeo Ishikawa, Hazu, and Kiyomichi Okada, Ama, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Aug. 5, 1976, Ser. No. 712,007
Claims priority, application Japan, Aug. 6, 1975, 50/96200
Int. Cl.[2] B41J *33/56*
U.S. Cl. 400—215.3 **4 Claims**



1. In a typewriter having a machine frame, a top cover movably supported on said machine frame between an open position and a closed position, and a ribbon vibrator vertically movable between a lifted printing position and a lowered non-printing position, in response to a printing operation, a ribbon changing mechanism comprising:

(a) an actuating member operably connected with said ribbon vibrator to shift said ribbon vibrator between said lowered position and a ribbon changing position located above said lowered position, independently of the printing operation;

(b) a first operating means for moving said actuating member to a first position where said ribbon vibrator is shifted to said ribbon changing position;

(c) means for retaining said actuating member in one of said first position and a second position where said ribbon vibrator is shifted to said lowered position;

(d) a ribbon retaining portion including a rear ribbon retaining member and a front ribbon retaining member on said ribbon vibrator, said front ribbon retaining member defining a pair of ribbon passages including closed top and bottom portions in combination with said rear ribbon retaining member, said front ribbon retaining member being supported on a lower portion of said ribbon vibrator to be movable toward a direction for opening said closed top portions of said ribbon passages;

(e) an opener pivotally mounted on said machine frame to be engagable with said front ribbon retaining member and operably connected with said actuating member, said front ribbon retaining member being moved to open said closed top portions of said ribbon passages when said actuating member is shifted to said first position by the operation of said first operating means;

(f) a guide member provided on said machine frame for guiding the opening and closing movements of said top cover;

(g) a returning actuator provided on said top cover for returning said actuating member to said second position; and,

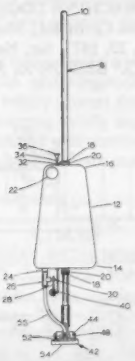
(h) a second operating means including said top cover and a returning member operably connected with said actuating member, said returning member having a cam portion engagable with said returning actuator for returning said actuating member to said second position by the closing movement of said top cover.

4,119,386

MOP ASSEMBLY TO DISTRIBUTE SELECTED LIQUIDS ON FLOOR AREAS, TO BE WAXED, CLEANED, AND/OR STRIPPED

Ernest W. Cushing, 3229 S. 135th, Seattle, Wash. 98168

Filed Jun. 10, 1976, Ser. No. 694,771
Int. Cl.[2] A47L *1/08*
U.S. Cl. 401—138 **2 Claims**



1. A mop assembly for distributing liquids on a floor area comprising an elongated handle having an upper end to be grasped by an operator, an elongated mop head pivotally attached to the lower end of said handle, a tank carried by and surrounding a portion of said handle, said handle extending through said tank centrally thereof, means on said tank sealingly securing said tank to said handle portion, said tank being generally rectangular in horizontal section and having its major axis essentially parallel to the axis of said mop head, said tank having an upper filler opening and a lower outlet opening, a flexible conduit connecting said outlet opening to said mop head, a valve in said conduit, a sleeve extending through said tank from top to bottom generally parallel to said handle and valve operator means connected at one end to said valve and

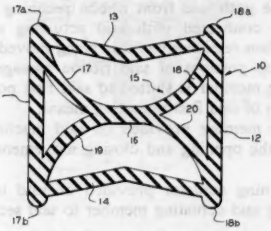
extending through said sleeve, the opposite end of said operator means projecting exteriorally of the tank.

4,119,387

PAVEMENT JOINT STRUCTURES

Delmont D. Brown, North Baltimore, Ohio, assignor to The D. S. Brown Company, North Baltimore, Ohio

Filed Jul. 18, 1977, Ser. No. 816,330
Int. Cl.[2] E01C *11/02*
U.S. Cl. 404—69 **5 Claims**



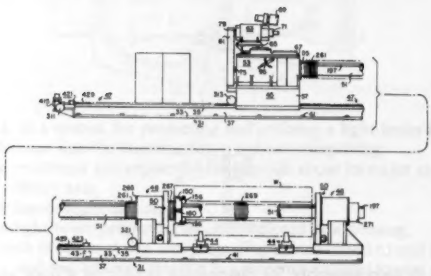
1. An interlockable elastomer seal for joints with spaced metal joint members having interlock means adapted to interlock with interlock means of the seal, said seal comprising an elongated, four sided, webbed elastomer seal having substantially planar side walls connected by a top wall and a bottom wall and a double arch, internal, elastomer web structure in which the nadir of a downwardly arched, upper arch and the apex of an upwardly arched, lower arch are united and the four ends of the two arches merge smoothly with respective side walls of the seal substantially at the four respective corners thereof, and interlock means on the four corners of said seal adapted to interlock with the interlock means of said metal joint member.

4,119,388

MACHINE TOOL

Harry J. Armitage, 1546 Cavitt Rd., Monroeville, Pa. 15146

Filed Jun. 23, 1977, Ser. No. 809,304
Int. Cl.[2] B23B *39/00, 51/08*
U.S. Cl. 408—111 **21 Claims**



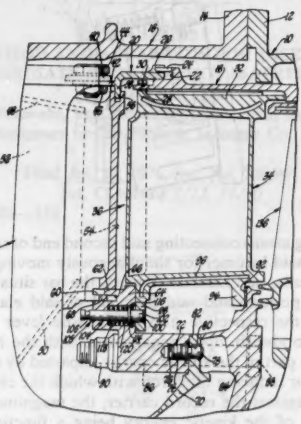
1. A boring mill for boring work at a high rate, including a bed, means on said bed, for fixedly supporting said work, a massive boring bar, massive cutting-tool means rigidly mounted on said boring bar intermediate the ends thereof, a first drive, connected to said boring bar, for rotating said boring bar and the cutting tool means mounted thereon, bearing means of substantial area connected to said bed for supporting said drive and bar movably along said bed, said bearing means including at least one bearing supported by said bed external of said first drive, and a second drive for advancing said first drive and boring bar along said bed in a direction generally along said boring bar, to advance said cutting-tool means into, and to maintain said cutting-tool means in, cutting engagement with, said work.

4,119,389

RADIALLY REMOVABLE TURBINE VANES

Ted F. Gee, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 17, 1977, Ser. No. 759,911
Int. Cl.[2] F01D *9/04*
U.S. Cl. 415—189 **4 Claims**



1. A radially removable stator vane array for gas turbine engines with gas flow paths therethrough comprising: an inner support ring, a first removable index vane having a base, a lock pin slidably supported in said ring including a head thereon interlocked with said base, spring means for axially loading said lock pin to maintain said head interlocked with said base and to permit retraction of said pin from said base, a plurality of circumferentially located indexed vanes on said ring on either side of said index vane, each of said indexed vanes having a base with a side slot therein, a plurality of fixed retention pins on said ring each interlocked with each of said slots to hold each of said indexed vanes thereon, said index vane being radially removable from said ring when said lock pin is retracted, each of said indexed vanes being circumferentially movable when said index vane is removed to shift the side slots therein from said fixed retention pins for positioning each indexed vane for subsequent radial separation from said ring.

4,119,390

LIQUID-COOLED, TURBINE BUCKET WITH ENHANCED HEAT TRANSFER PERFORMANCE

James T. Dakin, Schenectady, and Kenneth A. Darrow, Sprakers, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

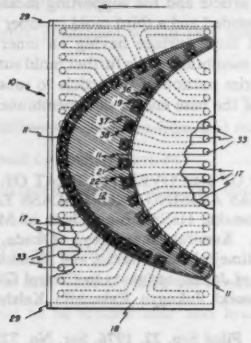
Filed Nov. 19, 1976, Ser. No. 743,271
Int. Cl.[2] F01D *5/18*
U.S. Cl. 416—96 R **6 Claims**

1. In liquid-cooled turbine bucket construction comprising an airfoil-shaped portion, a platform portion and a root portion for mounting said bucket in the rim of a rotatable turbine wheel, wherein at least said airfoil-shaped portion has a plurality of open-circuit distribution paths including subsurface coolant passages extending generally spanwise along the pressure and suction faces of said airfoil-shaped portion and liquid coolant metering means in flow communication therewith, the improvement comprising:

said coolant passages being of substantially circular transverse cross-section;

means for splitting liquid coolant flow affixed within individ-

ual coolant passages, said splitting means subdividing the internal volume of each such coolant passage into a plurality of helical passageways; and



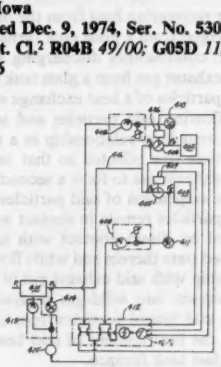
means provided along said splitting means for interrupting liquid flow coming into contact with said liquid flow interrupting means and increasing the area of contact of the liquid flow with the coolant passage inner surface area adjacent thereto.

4,119,391

METHODS AND SYSTEMS FOR CONTROLLING THE OPERATION OF MEANS FOR COMPRESSING A FLUID MEDIUM AND THE CORRESPONDING NETWORKS

Alexander Rutshtein, and Naum Staroselsky, both of West Des Moines, Iowa, assignors to Compressor Controls Corporation, Des Moines, Iowa

Filed Dec. 9, 1974, Ser. No. 530,610
Int. Cl.[2] R04B *49/00*; G05D *11/02*
U.S. Cl. 417—26 **3 Claims**



1. The method of controlling a system including compressing means for compressing a fluid medium, a plurality of users of the fluid medium spaced at a distance from said compressing means, said compressing means being fluidly connected to said users, and throttling means connected immediately before all but one of the users, comprising:

controlling the output of said compressing means and thereby maintaining a constant pressure immediately before the one of said users having no throttling means; and

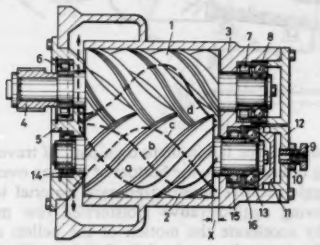
controlling the throttling means before each of the other users to thereby maintain a respective desired constant pressure before each of said other users.

4,119,392

SCREW COMPRESSOR WITH AXIALLY DISPLACEABLE MOTOR

Hans Breckheimer, Eschborn, Germany, assignor to Demag AG, Duisburg, Germany

Filed Nov. 22, 1976, Ser. No. 743,780
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1975, 2553222
Int. Cl.[2] F01C *1/16, 21/12*; F04C *17/12, 29/08*
U.S. Cl. 418—201 **5 Claims**



1. Rotary compressor apparatus of the axial flow screw rotor type, comprising

(a) a male and a female rotor mounted with coplanar axes to rotate in intermeshing relation in said apparatus;

(b) a housing defining a working chamber for said rotors;

(c) said working chamber comprising two longitudinally extending intersecting bores with coplanar axes;

(d) said rotors rotating in sealing engagement with the walls of said bores without touching;

(e) axially spaced end wall portions in said housing transverse to said coplanar axes of said bores;

(f) said end wall portions being axially spaced from the ends of said rotors to provide mounting clearance for said rotors;

(g) a low pressure port in one said end wall portion and a high pressure port in the other said end wall portion and means for recycling output volume from said high pressure port to said low pressure port; the improvement characterized by

(h) one of said rotors being axially shorter beyond mounting limitations than the said longitudinally extending axial bore therefor and axially shorter than the other rotor; and

(i) said shorter rotor being axially displaceable toward and away from one said end wall portion for recycling output volume from said high pressure port to said low pressure port.

4,119,393

PAN AGGLOMERATION WITH MECHANICAL PELLET CLASSIFICATION

Glenn A. Heian, Franklin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

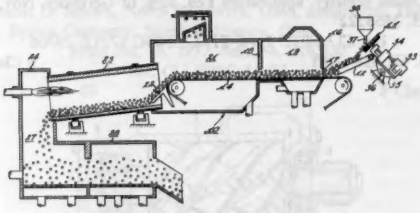
Division of Ser. No. 551,724, Feb. 21, 1975, Pat. No. 4,017,264. This application Jan. 5, 1977, Ser. No. 757,088
Int. Cl.[2] B29B *1/02*
U.S. Cl. 425—222 **2 Claims**

1. In a material classifier arrangement for a pelletizer pan that is rotatable about an inclined axis and having an agglomerative moisturized raw material supplied thereto for movement without the rotating pan;

a supporting frame;

a material classifier means carried by said supporting frame in position to engage with the agglomerative moisturized raw material carried by said pan at the outer periphery of said pan and at an angle of between 30°to 60°as measured in a clockwise direction from a line which passes through the axis about which said pan rotates and a point which relates to the uppermost position of the pan as viewed

from the front of said pan, said classifier means being positioned above the material bed a selected distance to separate and to deflect the larger formed pellets from the smaller pellets from the up-moving moisturized raw material and allow the smaller pellets to continue to travel with



the pan and free fall in there own path of travel in a cascading return flow to the bottom of the pan over up-moving agglomerative moisturized raw material to become up-moving agglomerative moisturized raw material to thereby accelerate the motion of the pellets and effect densification and growth of the forming pellets.

4,119,394

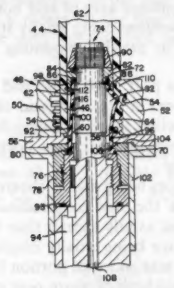
APPARATUS FOR FORMING AN END FINISH ON A HOLLOW ARTICLE

John T. Cary, Naperville, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 782,273

Int. Cl.[2] B29D *23/03*

U.S. Cl. 425—390 **9 Claims**



1. Apparatus for forming an end finish on a hollow article having a plastically deformable tubular end portion terminating in an open end of the article, the apparatus comprising a mold surface adapted to surround the end portion in juxtaposition with the outer surface thereof, an expandable tubular membrane having an upper end and a base end, said upper end being receivable within the end portion, means supporting the membrane in juxtaposition with the inner surface of the end portion, means sealing the interior of the membrane from the ambient, means restricting elongation of the membrane, means limiting expansion of the membrane to a lateral zone thereof coextensive with the end portion, means communicating with the interior of the membrane for subjecting the interior of the membrane to a fluid under pressure to expand the membrane laterally in engagement with the inner surface of the end portion, whereby to conform the outer surface of the end portion to the mold surface, choke means adjacent to the mold surface and extending inwardly thereof, mandrel means carried by the supporting means and adapted to engage the inner surface of the wall of the article opposite the choke means when the membrane is in juxtaposition with the inner surface of the end portion, the mandrel means and the choke means cooperating to constrict the wall of the article therebetween at a location adjacent to the end portion and opposite the open end of the article when the membrane is received within the end portion and the end portion is surrounded by the mold surface, whereby to preclude extrusion of the membrane between the wall of the article and the supporting means when the membrane is expanded and a third mold member adjacent the exterior of said mold surface having an inner wall position to engage said membrane and a further mold surface positioned to engage the rim portion of the article to substantially preclude expansion of the base end of said membrane.

4,119,395

METHOD OF RECOVERING HEAT OF COMBUSTION WASTE GAS ARISING FROM GLASS TANK FURNACE

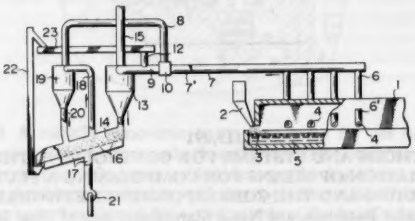
Kyohei Hatanaka; Hajime Inoue, both of Matsusaka; Haruya Hisatomi, Kamifukuoka; Koya Okuda, Chiba; Takeshi Suzuki, Himeji; Mikio Murao, and Susumu Utiyama, both of Kobe, all of Japan, assignors to Central Glass Co., Ltd., Ube and Kawasaki Jukogyo Kabushiki Kaisha, Kobe, both of, Japan

Filed Sep. 22, 1976, Ser. No. 725,532

Claims priority, application Japan, Sep. 27, 1975, 50-116656; Sep. 27, 1975, 50-116657; Sep. 27, 1975, 50-116658; Sep. 27, 1975, 50-116661

Int. Cl.[2] F23D *11/44*

U.S. Cl. 431—11 **17 Claims**



1. A method for recovering heat from the high temperature exhaust gas discharged from a glass tank furnace, which comprises the steps of: continuously discharging a first stream of high temperature exhaust gas from a glass tank furnace; continuously dispersing particles of a heat exchange substance in said exhaust gas and flowing said particles and said exhaust gas together in concurrent flow relationship in a duct, said particles having a particle size selected so that said particles are suspended in said exhaust gas to form a second stream consisting essentially of a suspension of said particles in said exhaust gas whereby said particles remain in contact with said exhaust gas and are heated by direct contact with said exhaust gas while in a suspended state therein and while flowing in concurrent flow relationship with said exhaust gas in said duct; feeding said second stream into solid-gas separation means and therein separating said heated particles from said exhaust gas; and then utilizing the heat content of said heated particles to supply heat to a glass tank furnace.

4,119,396

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF MOIST, GRANULAR MATERIALS

Andris Abelitis; Artur Behrendt, both of Hoffnungsthal, and Jakob Hinterkeuser, Menden, all of Germany, assignors to Kockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Jan. 31, 1977, Ser. No. 764,446

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1976, 2605042

Int. Cl.[2] F27B *15/00*

U.S. Cl. 432—106 **3 Claims**

1. A heat exchanger for the treatment of moist, granular material comprising:

at least two superposed cyclone separators,

a relatively long gas conduit connecting the lower cyclone separator to the upper one,

at least one burner positioned within said lower cyclone separator,

a rotary kiln,

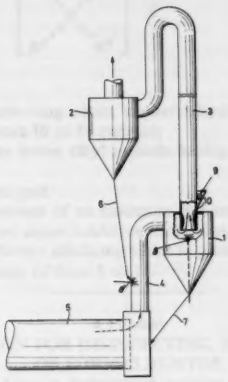
conduit means delivering hot gases from said rotary kiln to the lower of said cyclone separators,

means for discharging particles from the upper cyclone separator into said conduit means,

a burner located in said conduit means,

charging means in said relatively long gas conduit for introducing material to be treated near said lower cyclone separator,

a venturi-type constriction in said relatively long gas conduit below said charging means, said constriction having its lower end projecting into said lower cyclone separator, and



a gas flow rectifier in said relatively long gas conduit below said constriction.

4,119,397

PRODUCT AND METHOD OF PRINTING CARPET-II

Robert W. Synder, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Jan. 10, 1977, Ser. No. 757,877

The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.

Int. Cl.[2] D06P *7/00;* D04H *18/00;* D06P *5/00*

U.S. Cl. 8—2.5 A 2 Claims

1. A process for making decorative carpet through the use of sublimable dyes comprising the steps of:

(a) printing sublimable dyes on the carpet backing prior to the time the carpet face yarns are tufted into the carpet backing,

(b) tufting the carpet face yarns into the carpet backing with the carpet face yarn pile being on the side of the carpet backing which contains the sublimable dyes, and then

(c) transferring these sublimable dyes from the carpet backing to the carpet face yarn through the application of heat to the carpet to vaporize the dyes and the application of a vacuum to draw the dyes from the carpet backing to the carpet face yarns.

4,119,398

COMPOSITION FOR PRE-TREATING FABRIC FOR TRANSFER PRINTING AND A TRANSFER PRINTING PROCESS

Terry Brook Purser, 17 The Lawns, Hatch End, England

Filed Aug. 31, 1977, Ser. No. 829,479

Claims priority, application United Kingdom, Aug. 31, 1976, 35982/76

Int. Cl.[2] D06P *5/06, 5/08, 5/10*

U.S. Cl. 8—2.5 R 18 Claims

1. A method of transfer printing a fabric containing fibres that do not readily retain dyes applied thereto by transfer printing, said method comprising

(I) applying to the fabric an aqueous composition formed by the addition to water of

(a) a coating material comprising a self-curing acrylic resin composition in an amount to provide 40 to 120 grams of said acrylic resin per liter of said water and excluding any water included in said acrylic resin composition, and

(b) at least one of (i) a softening agent for the fibres of the fabric in an amount to provide 8 to 40 grams of said agent per liter of said water and excluding any water added with said softening agent and (ii) a self-curing elastomeric polysiloxane composition in an amount to provide 1 to 35 grams of said polysiloxane composition per liter of said water and excluding any water in said polysiloxane composition.

(II) drying the thus treated fabric.

(III) transfer printing the fabric thus obtained,

(IV) curing the resin content of the coating before, during and/or after the transfer printing step.

4,119,399

COMPOSITION FOR COLORING HAIR CONTAINING AN OXIDIZING AGENT AND CERTAIN QUATERNARY AMINES

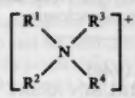
Raymond Feinland, Stamford, Conn.; Stanley Pohl, New Rochelle, and Michael Hnatchenko, Bronx, both of N.Y., assignors to Clairol Incorporated, New York, N.Y.

Division of Ser. No. 656,503, Feb. 9, 1976. This application May 11, 1977, Ser. No. 796,115

Int. Cl.[2] A61K *7/13*

U.S. Cl. 8—10.2 27 Claims

1. A composition suitable for coloring hair comprising an aqueous vehicle containing an effective amount of an oxidizing agent, from about 0.05 to 5% by weight of a quaternary amine compound of the formula:



(I)

in which:

R^1 and R^2 are long chain aliphatic hydrocarbon radicals having about 10 to 26 carbons;

R^3 and R^4 are lower alkyl radicals having about 1 to 5 carbons;

X is an anion; and

an effective amount of an oxidation dye intermediate which develops a color under oxidative conditions; said composition containing sufficient alkalizing agent to give said composition a pH in the range of from 8 to 11.

4,119,400

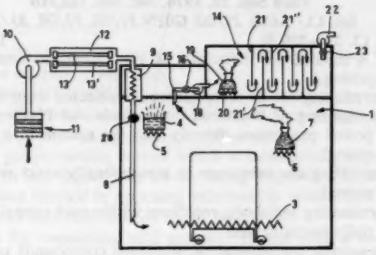
INSTALLATION FOR DISINFECTING, BY THE ACTION OF FORMALDEHYDE

Maurice Kurz, Geneva, Switzerland, assignor to Societe DETEC S.A., Geneva, Switzerland

Filed Feb. 11, 1977, Ser. No. 767,992

Int. Cl.[2] A61L *3/02, 3/00, 13/02*

U.S. Cl. 422—298 4 Claims



1. Apparatus for disinfecting medical apparatus and especially artificial respirators by the action of formaldehyde fumes subsequently neutralized by ammonia fumes and adapted to avoid the deposit of crystalline hexamethylene tetramine inside the medical apparatus, said disinfecting apparatus comprising:

a disinfection enclosure adapted to receive a medical apparatus and provided with at least one hermetically closed door through which the medical apparatus is inserted and subsequently removed;

means for introducing formaldehyde fumes into said enclosure;

air inlet means for introducing air into said enclosure;

a source of heat for raising the temperature of the air to a predetermined value;

a decontamination compartment having a UV source for decontaminating the air introduced into said enclosure;

pump means for conveying the air from outside of said enclosure successively to said decontamination compartment to said source of heat and to said disinfecting enclosure;

an auxiliary neutralization chamber communicating with said disinfecting enclosure and provided with a souce of ammonia fumes, the volume of said neutralization chamber being such as to allow said ammonia fumes to spread and to come into contact with formaldehyde fumes for a sufficient time to ensure neutralization thereof;

pump means connected to said disinfection enclosure and to said neutralization chamber and adapted to withdraw the formaldehyde fumes from said disinfection enclosure and deliver them to said neutralization chamber; and

a non-return valve allowing the formaldehyde fumes to be conveyed to said neutralization chamber and precluding

the reverse movement thereof from said neutralization chamber to said disinfection enclosure.

4,119,401

TOTAL BILIRUBIN ASSAY

Musa M. Sansur, Eastchester; Daniel L. Vlastelica, Congers, and Anne C. Delea, Yonkers, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jun. 7, 1977, Ser. No. 804,381
Int. Cl.[2] G01N *33/16*
U.S. Cl. 23—230 B **9 Claims**

1. A method for quantitatively determining the total bilirubin concentration in a bilirubin-containing biological liquid which comprises at least partially solubilizing a measured amount of said biological liquid under alkaline conditions, reacting the liberated bilirubin from said biological liquid with a stabilized diazo reagent under said alkaline conditions and spectrophotometrically measuring absorbance of the resulting solubilized mixture.

4,119,402

METHOD TO MEASURE IN VIVO N-NITROSO COMPOUNDS

David H. Fine, Framingham; Ronald D. Ross, Jr., Waltham, and David P. Rounbehler, Concord, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Sep. 10, 1976, Ser. No. 722,316
Int. Cl.[2] A61K *29/00*; G01N *31/06, 31/08, 33/16*
U.S. Cl. 23—230 B **11 Claims**

1. A method for measuring in vivo N-nitroso compounds, comprising:

introducing one or more substances selected from the group consisting of N-nitroso compounds and N-nitroso compound precursors directly into the system of a live test animal;

permitting the substance to metabolically react within the animal;

terminating metabolic reactions within said animal substantially instantly; and

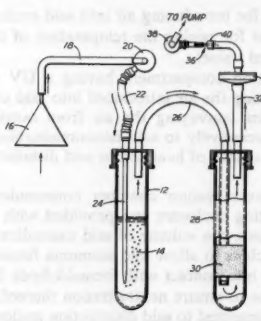
measuring the amount of N-nitroso compounds present in the entire animal.

4,119,403

METHOD AND APPARATUS FOR TEMPERATURE CONTROLLED SAMPLERS

John Walter Rex, Pittsburgh, Pa., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jun. 15, 1977, Ser. No. 806,645
Int. Cl.[2] G01N *31/06*
U.S. Cl. 23—232 R **46 Claims**



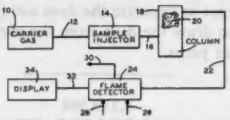
1. In a method of measuring the amount of one gas in another gas using bubblers and reagents each responsive to a particular gas in which the temperature of one reagent is controlled to be within a predetermined temperature range, the improvements in controlling the temperature of said one reagent comprising the steps of establishing a first ambient temperature zone, establishing a second temperature zone containing the bubblers and reagents, establishing a third controlled temperature zone within said second zone containing said one of said reagents, and using said first zone as a heat sump for said third zone independently of said second zone.

4,119,404

APPARATUS AND METHOD FOR SOUR GAS ANALYSIS

John G. W. Price, Carrollton, Tex., assignor to Core Laboratories, Inc., Dallas, Tex.

Filed Jul. 5, 1977, Ser. No. 812,899
Int. Cl.[2] G01N *21/58*
U.S. Cl. 23—232 E **16 Claims**



1. A flame photometric detector comprising a burner means with a tip; means for supplying to the burner a gas sample for analysis and a fuel; means for supplying combustion supporting gas to the burner tip; means to produce a flame to excite constituents of the sample and produce characteristic light emissions thereof; an elongated transparent chimney surrounding the flame to cool the excited constituents and concentrate maximum light emission of the sample in a preselected area remote from and excluding the flame; optical filtering means to allow only preselected characteristic light emissions to pass therethrough; and photo detector means having an optical sensing path which includes the preselected area of emission concentration but excludes the flame, and detects the emissions passing through the filtering means to produce at least one signal.

4,119,405

TEST MEANS AND METHOD FOR INTERFERENCE RESISTANT DETERMINATION OF OXIDIZING SUBSTANCES

Charles Tak Wai Lam, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 13, 1978, Ser. No. 877,499
Int. Cl.[2] G01N *33/16*; C12K *1/04, 1/10*
U.S. Cl. 422—56 **24 Claims**

1. Test means for the determination of an oxidizing substance which comprises a hydrazone and hydroxynapthalenesulfonate selected from the group of 4,5-dihydroxy-2,7-napthalenedisulfonic acid and 1-hydroxy-2-napthalene-sulfonic acid.

4,119,406

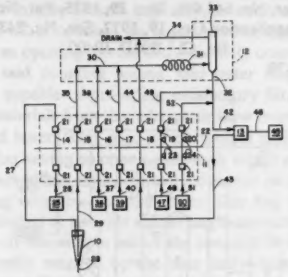
CALIBRATION APPARATUS

Anton Hubert Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 6, 1976, Ser. No. 683,806
Int. Cl.[2] A61B *5/00*; G01N *1/00, 33/16*
U.S. Cl. 422—81 **2 Claims**

1. Apparatus for calibration of a sensor during use in a calibratable system for monitoring a specific characteristic of a continuously flowing blood sample comprising in combination a first peristaltic pump means for introducing a continuously flowing blood sample from a source connected thereto; a sensor for detecting said specific characteristic, said sensor having flow path means, said first peristaltic pump means

communicating with said sensor flow path means to supply a continuously flowing blood sample thereto; a drain communicating with said sensor flow path means; and a second peristaltic pump means communicating with said sensor flow path means for introducing a reference liquid from a source connected thereto to said sensor flow path means for contact with said sensor, said second pump means being capable when in



pumping operation of introducing said reference liquid to said sensor flow path means during sensor calibration at a flow rate and pressure which is greater than the flow rate and pressure of the blood sample in the sensor flow path means from the first peristaltic pump means thus causing a diversion of the continuously flowing blood sample from the sensor to the drain during calibration of the sensor.

4,119,407

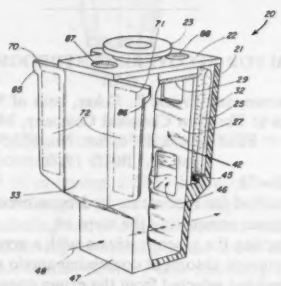
CUVETTE WITH REAGENT RELEASE MEANS

Robert H. Goldstein, Tustin, Calif., and Robert M. Stahl, Indianapolis, Ind., assignors to Bio-Dynamics, Inc., Indianapolis, Ind.

Continuation of Ser. No. 664,623, Mar. 8, 1976, abandoned, which is a continuation of Ser. No. 603,509, Aug. 11, 1975, abandoned. This application Aug. 24, 1977, Ser. No. 827,123

Int. Cl.[2] B04B *7/00;* **G01N** *1/10*

U.S. Cl. 422—58 **14 Claims**



1. A cuvette for holding a liquid substance during spectrophotometer tests comprising:

a hollow main body to receive said liquid substance, said main body including at least two opposed end walls to allow testing of said liquid substance by a spectrophotometer while said liquid substance is within said main body;

a first bag of reagent positioned within said main body, said bag having bursting means operable to allow said reagent to escape said bag and mix with said liquid substance upon exposing said main body to a predetermined amount of centrifugal force, said bag of reagent including an outer main body of plastic sheet of a predetermined permeability;

desiccant means mounted in said hollow main body being operable to absorb vapor within said hollow main body prior to said vapor being absorbed by said bag of reagent, said desiccant means including a container of desiccant attached to said lid, said container including an outer wall of plastic of a permeability higher than said predetermined permeability of said bag of reagent; and

a lid sealingly mounted on said hollow main body.

4,119,408

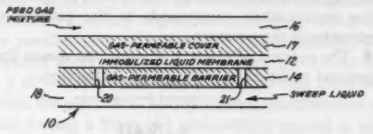
APPARATUS FOR MAINTAINING THE SEPARATION EFFICIENCY OF IMMOBILIZED LIQUID MEMBRANES IN GAS SEPARATION

Stephen L. Matson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 22, 1977, Ser. No. 809,116

Int. Cl.[2] B01D *13/00, 53/22, 59/10;* **C01B** *17/16*

U.S. Cl. 422—169 **13 Claims**



1. In an apparatus for removing a gaseous component from a gaseous mixture, comprising:

a first immobilized liquid membrane containing in the liquid thereof at least one species which is reversibly chemically reactive with said gaseous component;

a first gas-permeable barrier which is substantially impervious to said liquid, said barrier being disposed with a first surface thereof in opposing relationship with a first surface of said immobilized liquid membrane;

means for contacting said gaseous mixture with a second surface of said immobilized liquid membrane; and

means for conducting a flow of sweep liquid along the opposite surface of said gas-permeable barrier to absorb gases emerging from said barrier;

the improvement for substantially maintaining the separation efficiency of said membrane, comprising said first barrier having at least one discrete passage extending from said first to said opposite surface thereof, said passage being of a size effective for receiving said sweep liquid therein at pressures below the pressure at which the substantially liquid-impervious character of said barrier is overcome in the region of the barrier other than said passage such that said sweep liquid communicates with said membrane through the passage, whereby an amount of said reactive species contained in said sweep liquid is transferred therefrom through said passage into the liquid immobilized in said membrane.

4,119,409

PROCESS FOR THE PREPARATION OF SYNTHETIC COKING COAL

Yutaka Aoki, Tokyo; Akira Hase, Kawasaki; Jiro Ito, Kamakura, and Hisomu Nagai, Tokyo, all of Japan, assignors to Nissho-Iwai Co., Ltd., Tokyo, Japan

Filed May 23, 1977, Ser. No. 799,165

Claims priority, application Japan, May 27, 1976, 51/60563

Int. Cl.[2] C10L *5/48*

U.S. Cl. 44—1 R **10 Claims**

1. A process for preparing synthetic coking coal which comprises mixing solvent refined coal with at least one coal and heat-treating the mixture at a temperature within a range of from about 300° C. to about 480° C.

4,119,410
PROCESS FOR IMPROVING COAL

James K. Kindig, Arvada, and Ronald L. Turner, Golden, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Filed Jan. 31, 1977, Ser. No. 764,390
Int. Cl.[2] C10L *9/10;* C10B *57/00*
U.S. Cl. 44—1 R 49 Claims

1. In a process for improving coal containing impurities and elemental sulfur wherein the coal is treated with a metal containing compound in order to enhance the magnetic susceptibility of one or more of the impurities susceptible to the metal containing compound treatment, thereby permitting the removal of these impurities by magnetic separation, the improvement comprising:

removing at least a portion of the elemental sulfur prior to performing the magnetic enhancement treatment.

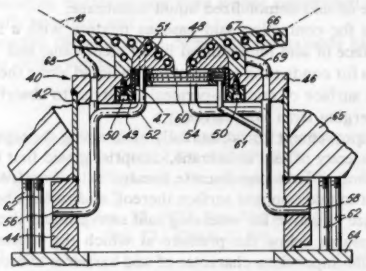
5. The process of claim 2 wherein the heat pretreatment step is conducted in the presence of a member selected from the group consisting of nitrogen, steam, carbon monoxide, carbon dioxide, ammonia, methane, air, ethane, propane, butane, and other hydrocarbon compounds in the gaseous state at the pretreatment temperature.

8. The process of claim 1 wherein the means for removing elemental sulfur comprises solvent extraction.

4,119,411
COAL GASIFICATION PLANT

John Alfred Anderson, Knowle, and Dennis Hebden, Guildford, both of England, assignors to British Gas Corporation, London, England

Filed Nov. 22, 1976, Ser. No. 744,035
Claims priority, application United Kingdom, Nov. 27, 1975, 48816/75
Int. Cl.[2] B01J *3/00*
U.S. Cl. 48—62 R 4 Claims

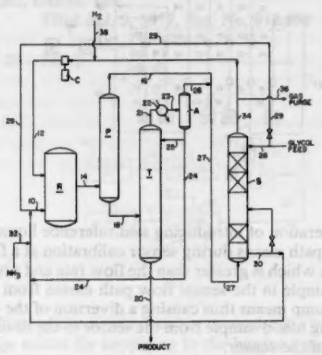


1. In a slagging gasifier comprising: a gasifying vessel; means for introducing coal into said vessel for gasification thereof in said vessel; means for introducing a gasifying medium into said vessel to effect gasification of coal therein; a hearth located at the bottom of said vessel and including a central slag removal orifice formed in a removable slag tap member positioned at said hearth for removing slag therefrom; a burner positioned beneath said slag removal orifice arranged to direct hot combustion products up the orifice for maintaining a pool of molten slag in said hearth; and a quenching chamber vessel below said gasifying vessel into which molten slag is periodically discharged downwardly from said hearth through said orifice onto said quenching chamber vessel; the improvement wherein there is provided an annular metal structure including means for supporting said slag tap member and said burner in their said positions with respect to the gasifier vessel, and means for detachably securing said structure in a gas-tight manner in operating position between the lower end of said gasifier vessel and the upper end of said quenching chamber vessel with said slag tap member and said burner being supported in their said positions, said annular metal structure forming a gas-tight passageway for material passing between said quenching chamber and said gasifier vessel.

4,119,412
AMMONIA ABSORPTION PROCESS

Prem S. Advani, Conroe, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Division of Ser. No. 644,696, Dec. 29, 1975, Pat. No. 4,091,218.
This application Oct. 19, 1977, Ser. No. 843,400
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—70 1 Claim



1. The process for separating ammonia from hydrogen and methane in a gas stream produced in a catalytic ammonolysis reaction in the presence of hydrogen which comprises the steps of:

a. contacting, in counter current flow, the gas stream with a dialkylene glycol in a packed tower operated at a pressure of from about 30 to about 150 psig;

b. recovering a liquid bottoms stream of the glycol rich in ammonia;

c. recovering a gaseous overhead stream consisting essentially of hydrogen and methane.

4,119,413
METHOD FOR RECOVERING HYDROGEN BROMIDE GAS

Eric R. Larsen, and Ernest L. Ecker, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 5, 1976, Ser. No. 673,578
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—71 21 Claims

13. A method for recovering hydrogen bromide gas from a gaseous stream comprising the steps of:

(a) contacting the gaseous stream with a nonaqueous hydrogen bromide absorbent containing acetic acid and at least one member selected from the group consisting of an acid anhydride and an acid halide to absorb at least a portion of the hydrogen bromide;

(b) heating the hydrogen bromide containing absorbent to desorb at least a portion of the hydrogen bromide.

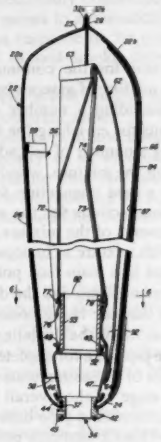
4,119,414
FILTER BAG CONSTRUCTION FOR A VACUUM CLEANER AND METHOD OF OPERATION

Oral M. Smaling, Normal, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.

Filed Dec. 15, 1976, Ser. No. 750,908
Int. Cl.[2] B01D *46/02*
U.S. Cl. 55—97 9 Claims

1. A filter bag construction for filtering dirt and other materials entrained in the exhaust air flow discharged from the exhaust outlet of a vacuum cleaner, said filter bag construction

comprising an elongated, outer, non-disposable filter bag having opposite ends and a peripheral side wall, said outer bag also having an opening in one of said ends and tubular coupling means secured in said opening, said coupling means being adapted to be connected to the exhaust outlet of said cleaner and having a portion extending into said outer bag, said outer bag also having an opening in the other of said ends through which the contents of said bag may be emptied, means for closing said other opening, an inner, porous, disposable filter bag having an opening therein and releasably connected to said portion of said coupling means, said outer filter bag being porous and capable of providing satisfactory filtration of dirt and other materials from the exhaust air flow from said cleaner without said inner, filter bag, the peripheral side wall of said outer bag also having an opening through which said inner bag may be removed and replaced, and means for closing said side wall opening whereby only said outer filter bag need be used when it is desired to provide a filter bag construction having a single stage of filtration in which the contents of the outer bag are periodically emptied by the user and whereby both the outer and inner filter bags are used when it is desired to provide a filter bag construction having two stages of filtration and in which the inner bag is periodically removed and replaced with a new bag when the inner bag is filled or otherwise in need of replacement.



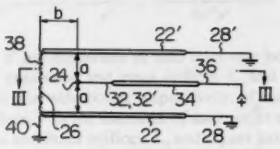
8. A method of operating a filter bag construction for a vacuum cleaner either as a single or two-stage filter, said bag construction including an elongated, porous, outer bag of filtering material having an opening in the lower end thereof and an elongated, flexible delivery tube extending lengthwise in said outer bag and having its lower end terminating above the lower end of said outer bag, said delivery tube being operable to direct unfiltered exhaust air toward the upper end of said outer bag, said opening being adapted to be connected to the exhaust outlet of the cleaner, and a flexible conduit in said outer bag having an upper end an lower end, said lower end being operatively connected to the opening in the lower end of said outer bag so as to be able to receive said unfiltered flow of exhaust air from said cleaner, said method comprising the steps of shifting the upper end of said flexible conduit from a position outside said delivery tube to a position wherein said upper end of said conduit is positioned in the lower end of said delivery tube, and operating said cleaner with the upper end of said flexible conduit positioned in the lower end of said delivery tube to obtain single stage filtration as unfiltered air discharges from the upper end of said delivery tube and passes through the pores of said outer bag.

4,119,415

ELECTROSTATIC DUST PRECIPITATOR

Kazuo Hayashi, and Ken Kamijo, both of Yokohama, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jun. 22, 1977, Ser. No. 808,684
Int. Cl.[2] B03C *3/00*
U.S. Cl. 55—124 **2 Claims**



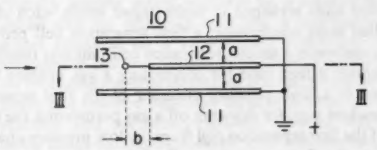
1. An electrostatic dust precipitator having a front and rear dimension and comprising a pair of substantially coextensive, grounded electrodes having respective inner faces which are substantially parallel with said front and rear dimension and which are spaced apart from each other a predetermined distance *2a* in a direction substantially normal to said front and rear dimension, the electrodes having formed therebetween an internal space having a front end substantially normal to said front and rear dimension, an electrically conductive line located between and substantially parallel with the inner faces of said electrodes, the conductive line being electrically connected to a source of d.c. voltage, and a grounded, perforated metal filter positioned at said front end substantially perpendicularly to the inner faces of said electrodes and substantially in parallel with said conductive line, wherein said conductive line is spaced apart a predetermined distance *a* from the inner face of each of said electrodes and a predetermined *b* from said metal filter positioned at said front end immediately adjacent the edges of the grounded electrodes and wherein said distance *b* is not less than the distance *a* and not more than 1.5 times the distance *a*.

4,119,416

ELECTROSTATIC PRECIPITATOR

Kazuo Hayashi, and Ken Kamijo, both of Yokohama, Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jun. 22, 1977, Ser. No. 808,683
Int. Cl.[2] B03C *3/00*
U.S. Cl. 55—136 **2 Claims**

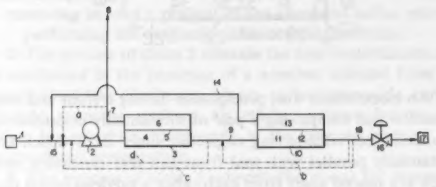


1. An electrostatic precipitator comprising at least one pair of parallel collecting plate electrodes connected to a first terminal of a potential source, an auxiliary plate electrode disposed between said collecting electrodes and connected to a second terminal of said potential source, a wire electrode extending parallel to a front edge of said auxiliary plate electrode and disposed between said parallel collecting electrodes, said wire electrode being spaced a distance *a* from each of said collecting electrodes and being spaced a distance *b* from said front edge of said auxiliary plate electrode and connected to said second terminal of said potential source, the ratio of *a* to *b* being substantially within a range of between 1:0.8 to 1:1.

4,119,417
GAS SEPARATOR

Hideaki Heki, Kawasaki; Osamu Ozaki, and Masayoshi Ohno, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Nov. 16, 1976, Ser. No. 742,239
Claims priority, application Japan, Nov. 17, 1975, 50-137280
Int. Cl.[2] B01D *53/22*
U.S. Cl. 55—158 10 Claims



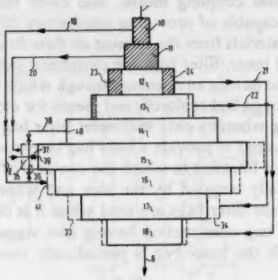
1. A gas mixture separator which comprises a first separator cell provided with a membrane; a second separation cell similarly fitted with a membrane; a feed pipe for conducting a gas mixture being separated to a high pressure chamber of the first separation cell; a leadout pipe for drawing off a gas permeating the membrane of the first separation cell from the low pressure chamber thereof; a connection pipe for carrying a gas which has not permeated the membrane of the first separation cell from the high pressure chamber thereof to the high pressure chamber of the second separation cell; a feedback pipe for returning a gas permeating the membrane of the second separation cell from the low pressure chamber thereof to the feed pipe; and a discharge pipe for removing a gas which has not permeated the membrane of the second separation cell from the high pressure chamber thereof, each of the first and second separation cells having an inlet and two outlets at the positions which enable the gases to make countercurrent flow in the cell, and membranes of the first and second separation cells having the same gas-permeating tendencies which is further provided with a recycle pipe extending from the connection pipe to the feed pipe.

3. A gas mixture separator which comprises a plurality of two-celled units arranged in multi-staged series, each of said two-celled units comprising: a first separation cell provided with a membrane; a second separation cell similarly fitted with a membrane; a feed pipe for conducting a gas mixture being separated to a high pressure chamber of the first separation cell; a leadout pipe for drawing off a gas permeating the membrane of the first separation cell from the low pressure chamber thereof to the first separation cell of the next upper stage; a connection pipe for carrying a gas which has not permeated the membrane of the first separation cell from the high pressure chamber thereof to the high pressure chamber of the second separation cell; a feedback pipe for returning a gas permeating the membrane of the second separation cell from the low pressure chamber thereof to the feed pipe; and a discharge pipe for removing a gas which has not permeated the membrane of the second separation cell from the high pressure chamber thereof to the first separation cell of the next lower stage, each of the first and second separation cells having an inlet and two outlets at positions which enable the gases to make countercurrent flow in the cell, and membranes of the first and second separation cells having the same gas-permeating tendencies.

4,119,418
SYSTEM FOR THE CONTINUOUS SEPARATION OF A GASEOUS MIXTURE

Joost Smid, Alkmaar, Netherlands, assignor to Ultra-Centrifuge Nederland N.V., The Hague, Netherlands

Filed Nov. 23, 1976, Ser. No. 744,280
Claims priority, application Netherlands, Dec. 19, 1975, 7514822
Int. Cl.[2] B01D *53/22*
U.S. Cl. 55—158 2 Claims



1. Cascade apparatus for the continuous separation of a gaseous mixture or a mixture of gaseous isotopes comprising an enriching cascade including a number of cascade-interconnected separating units for enriching the mixture and a depleting cascade including a number of cascade-connected separating units for depleting the mixture, which separating units are each provided with a feed connection for the mixture to be separated and two connections for the separate discharge of the separated components of the mixture, the cascade apparatus being supplied with mixture to be separated through a feed pipe-line which opens at a main feed point into a connecting pipe-line between the enriching and the depleting cascade, the top of the enriching cascade being connected to a discharge pipe-line, and the bottom of the depleting cascade being connected to a discharge pipe-line for depleted mixture, means for the temporary transfer of separating units from one stage of the cascade to another stage of the overall cascade, said means including branched connecting pipe-lines provided with closing elements, which closing elements permit the change-over of the respective separating unit as a result of closing element in one branch and of opening the closing element in the other branch, said cascade apparatus comprising at least one triple reversing pipe-line equipped with connecting points and closing elements for allowing the separating units to be included in a modified cascade structure according to a programmed change-over pattern.

4,119,419
SMOKE CONTROLLING ASH TRAY

Anthony Passaro, 2440 Prospect Ave., Bronx, N.Y. 10458, and Nicholas Joseph Parmigiano, 2560 Seymour Ave., Bronx, N.Y. 10469

Filed Dec. 7, 1976, Ser. No. 748,224
Int. Cl.[2] B01D *46/46;* A24F *19/09*
U.S. Cl. 55—212 20 Claims

1. An ash tray, comprising:

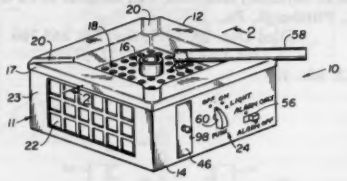
a. a housing having a passageway on one end thereof communicating with the interior of said housing and a plurality of openings for the passage of smoke into said housing,

b. support means positioned on said housing for supporting thereon a cigarette or cigar with its lighted end adjacent to said passageway,

c. a fan mounted within said housing so constructed and arranged as to create a draft of air through said passageway in a singular direction,

d. porous air outlet means arranged on said housing and positioned rearwardly of said fan, such that the draft of air created by said fan exits said housing through said porous outlet means,

e. smoke detector means operatively connected to said fan and contained within said housing, said smoke detector means adapted to detect the presence of smoke adjacent said passageway so as to obtain electrical energization of said fan such that smoke from the lighted cigarette or cigar is carried into said housing by the draft of air created by said fan,



f. control means electrically connected to said fan and said smoke detector means to automatically energize or deenergize said fan in response to the presence or absence of smoke adjacent to said smoke detector means, respectively,

g. at least one battery in said housing electrically connected to said fan for powering same,

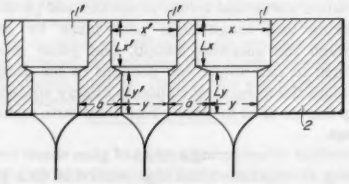
h. a purifier filter mounted in said housing between said fan and said passageway so as to obtain a filtering of the smoke prior to exiting from said housing, and

i. mounting means in said housing for supporting said filter in a manner such that said filter is removable from said housing.

4,119,420
ORIFICE PLATE FOR USE IN BUSHING FOR SPINNING GLASS FIBERS

Hiroaki Shono; Toshio Noji; Shinzo Ishikawa, and Isao Wakasa, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Aug. 5, 1977, Ser. No. 822,337
Claims priority, application Japan, Aug. 20, 1976, 51-99428
Int. Cl.² C03B *37/02*
U.S. Cl. 65—1 **5 Claims**



1. An orifice plate for use in a bushing for spinning glass fibers having a plain lower surface and provided with a number of densely arranged orifices each of which consists of two cascaded coaxial cylindrical bores of different diameters, one of said bores opening in the upper surface of said orifice plate to constitute a molten-glass inlet-side bore, while the other bore opening in said lower surface to constitute a molten-glass outlet-side bore, characterized in that there exists a relationship between the outermost orifices and the inner orifices located at the inside of the outermost orifices, said relationship being represented by the following equation of:

$$\gamma_s = 0.57\,\gamma_u \text{ to } 0.86\,\gamma_u$$

where, γ_s and γ_u are variables determined in accordance with the dimensions of the bores of said outermost and inner orifices, respectively, and given by the following equations of:

$$\gamma_s = \frac{L_x}{x^4} + \frac{L_y}{y^4} + \frac{(x^3 - y^3)\tan\theta}{6x^3y^3}$$

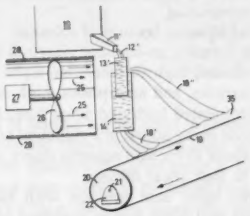
$$\gamma_u = \frac{L_{x'}}{x'^4} + \frac{L_{y'}}{y^4} + \frac{(x'^3 - y^3)\tan\theta}{6x'^3y^3}$$

where, x and x' are diameters of said inlet-side bores, respectively, of said outermost and inner orifices, L_x and $L_{x'}$ are axial lengths of said inlet-side bores, respectively, of said outermost and inner orifices, y is the diameter of said outlet-side bores of said outermost and inner orifices, L_y and $L_{y'}$ are axial lengths of said outlet-side bores, respectively, of said outermost and inner orifices, and θ is the angle at which a tapered intermediate section through which said two cylindrical bores in each orifice are connected intersects a plane parallel with the orifice plate.

4,119,421
ARRANGEMENT FOR FIBRATION OF MOLTEN MINERAL

Lennart Alenrot; Willy Hartung; Torbjorn Lund, and Ulf Aberg, all of Skovde, Sweden, assignors to Rockwool Aktiebolaget, Skovde, Sweden

Filed Jun. 7, 1977, Ser. No. 804,294
Claims priority, application Sweden, Jun. 30, 1976, 7607456
Int. Cl.² C03B *19/04*
U.S. Cl. 65—14 **6 Claims**



1. Apparatus for manufacturing mineral fibers from a mineral melt comprising, in combination:

two spinner wheel aggregates arranged image-symmetrically with respect to each other and each comprising a primary spinner wheel rotatable on a substantially horizontal axis for receiving melt and a secondary spinner wheel rotatable on a substantially horizontal axis and arranged in cascade relation to the primary spinner wheel for receiving material therefrom and for giving off mineral fibers to a collctor band, the directions of rotation of the primary and secondary spinner wheels, respectively, being image-symmetrical relative to one another;

means for supplying mineral melt to the primary spinner wheel of each spinner wheel aggregate;

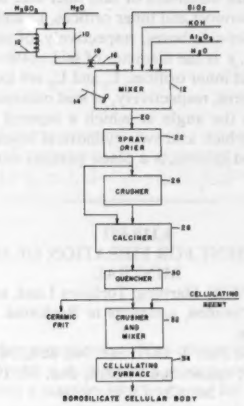
a collector band for receiving mineral fibers given off by said secondary spinner wheels;

means for blowing a stream of air in a substantially horizontal direction and generally axially of said spinner wheels over the mantle surfaces of the spinner wheels for transferring fibers from said secondary spinner wheels to said collector band, said primary and secondary wheels in each spinner wheel aggregate in opposite directions and for rotating said secondary spinner wheels in a direction such that at the place where they are closest to one another, the peripheral direction of motion of each takes place from down to upwardly.

4,119,422
PULVERULENT BOROSILICATE COMPOSITION AND A METHOD OF MAKING A CELLULAR BOROSILICATE BODY THEREFROM

David Rostoker, Monroeville, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Division of Ser. No. 825,840, Aug. 18, 1977, which is a division of Ser. No. 685,054, May 10, 1976, Pat. No. 4,075,025. This application Feb. 15, 1978, Ser. No. 877,888
Int. Cl.[2] C03B *19/08*
U.S. Cl. 65—22 4 Claims



1. A method of making a cellular potassium aluminoborosilicate body comprising,

forming an aqueous boric acid solution,

separately forming an aqueous slurry of potassium hydroxide, colloidal, high surface area, alpha monohydrate alumina particles, and amorphous, high surface area, colloidal, precipitated hydrated silica particles, said potassium hydroxide being added in a sufficient amount to provide a pH of about 10 for said aqueous slurry, and subjecting said slurry to high shear mixing,

mixing the boric acid solution with said aqueous slurry whereby said boric acid is absorbed on to the surface of the colloidal particles,

thereafter adding additional amorphous, high surface area, precipitated hydrated silica until said slurry contains about 22% by weight solids,

drying said slurry and forming agglomerates of the solid constituents in said slurry,

calcining said agglomerates at a temperature sufficient to fuse said agglomerates,

quenching said calcined agglomerates to prevent substantial devitrification of said calcined agglomerates,

crushing said fused agglomerates and mixing said calcined agglomerates with a cellulating agent to form a mixture of crushed calcined agglomerates and cellulating agent, and

thereafter cellulating said mixture at a temperature sufficient to coalesce said calcined particles and gasify said cellulating agent to form cells in the coalesced material.

2. A method of making a cellular borosilicate body as set forth in claim 1 which includes,

crushing another portion of said calcined agglomerates,

positioning a layer of said crushed calcined agglomerates without said celluating agent in a container,

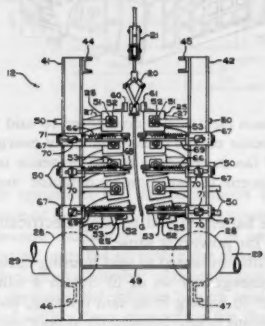
thereafter positioning a layer of said mixture of crushed calcined agglomerates and cellulating agent on said layer of crushed calcined agglomerates,

thereafter subjecting said layers to an elevated temperature sufficient to coalesce said calcined agglomerates and gasify said cellulating agent and thereby forming a composite layer of noncellular borosilicate glass with a layer of cellular borosilicate glass fused thereto.

4,119,423
TONG GUIDE MEANS IN GLASS SHEET QUENCHING APPARATUS

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 29, 1977, Ser. No. 865,766
Int. Cl.[2] C03B *23/02, 27/00*
U.S. Cl. 65—104 8 Claims



1. An apparatus for tempering glass sheets comprising:

a furnace adapted to heat glass sheets to a temperature suitable for tempering;

a quenching station including a pair of opposed arrays of orifices adapted to direct blasts of tempering medium in a generally horizontal direction onto opposite surfaces of a glass sheet received therebetween; and

means for conveying a glass sheet from the furnace into the quench station along a longitudinal path between said arrays of nozzles, said conveying means including tongs adapted to grip an upper marginal edge portion of a glass sheet so as to support the glass sheet in a generally vertical disposition;

wherein said quenching station includes rigid guide means mounted above said arrays of nozzles and parallel to and flanking said longitudinal path taken by said tongs through the queching station, said guide means being located to face lower end portions of the tongs passing through the quenching station in closely spaced relationship thereto so as to closely limit transverse motions of the tongs.

5. A method of tempering a series of glass sheets comprising:

gripping an upper marginal edge portion of each glass sheet with tongs so as to support each glass sheet in a generally vertical position;

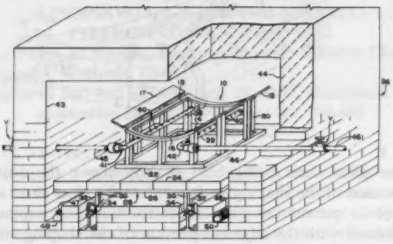
while thus supported, conveying each glass sheet through a heating chamber wherein the glass is heated to a temperature suitable for tempering and then through a quenching station wherein blasts of tempering medium are directed onto opposite sides of each glass sheet to impart a temper thereto;

wherein the improvement comprises reducing buffeting of the glass sheets by the blasts of tempering medium by restricting side-to-side motions of the tongs with rigid tong guide means closely spaced from and flanking the path taken by the tongs through the quenching station.

4,119,424
METHOD AND APPARATUS FOR SHAPING GLASS SHEETS ON A BENDING MOLD

John A. Comperatore, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 3, 1977, Ser. No. 803,015
Int. Cl.[2] C03B 23/02
U.S. Cl. 65—107 7 Claims



1. In the method of shaping a glass sheet by gravity sagging comprising supporting said sheet along an opposite pair of edges on oblique supports in shaping relation over an outline shaping mold, heating said glass sheet until it softens to sag and slide along said oblique supports and into conformity with the upper surface of said outline mold, the improvement comprising:

(1) observing the relative progress of said sagging and sliding of said opposite glass sheet side edges, and when one of said opposite glass sheet edges is observed to sag and slide less rapidly than the other of said opposite glass sheet edges,

(2) selectively applying cooling fluid against said glass sheet adjacent said one glass sheet side edge while refraining from applying cooling fluid against the remainder of said glass sheet, and

(3) discontinuing said selective application when both said glass sheet side edges are in approximate horizontal alignment with one another.

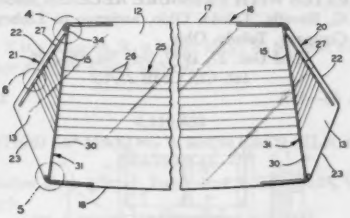
5. Apparatus for shaping a glass sheet by gravity sagging comprising an outline mold having an upper surface conforming in elevation and outline to the shape desired for the glass sheet after shaping, a pair of elongated slides extending obliquely upwardly and outwardly in a transverse direction from adjacent a pair of opposite side edges of said outline mold, a pair of apertured pipes extending lengthwise across the length of said mold in a direction approximately aligned with the length of an adjacent slide in a plane below said mold, each said pipe having apertures oriented to direct fluid upwardly adjacent each side edge of said outline shaping mold onto said glass sheet thereon, means to supply cooling fluid through a selected one or other of said pipes and separate valve means interposed between said cooling fluid supply means and each of said apertured pipes to control the selection of flow of cooling fluid through said one of said pipes.

4,119,425
METHOD OF BENDING A GLASS SHEET TO A SHARP ANGLE

James G. Marriott, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Division of Ser. No. 718,154, Aug. 27, 1976. This application Oct. 11, 1977, Ser. No. 841,228
Int. Cl.[2] C03B 23/02
U.S. Cl. 65—107 6 Claims

1. A method of forming an electrically heated glass sheet adapted to be bent to a relatively sharp angle comprising: applying an electrically conducting material to one surface of a glass sheet in a pattern forming a first circuit having a series of parallel electrically conducting lines connected at their opposite ends of a pair of spaced bus bars, applying additional electrically conducting material to said glass sheet surface in a pattern forming a second circuit having at least one electrically conducting paths extending transversely across and intersecting said electrically conducting lines of said first circuit, and

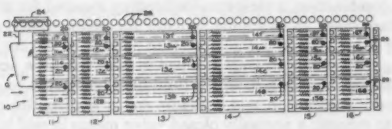


isolating said first circuit from said second circuit by forming discontinuities in said bus bars on opposite sides of each connection between said electrically conducting lines and said bus bars, respectively.

4,119,426
METHOD AND APPARATUS FOR ELIMINATING TONG VENTS IN A GLASS SHEET FURNACE

Joseph B. Kelly, Crestline, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 2, 1977, Ser. No. 830,263
Int. Cl.[2] C03B 27/02
U.S. Cl. 65—111 8 Claims



1. In the method of heating a glass sheet to approximately its strain point or above and then cooling the glass sheet so as to increase its strength, wherein the glass sheet is heated while being gripped along edge portions by metal tongs having a greater heat capacity than the glass sheet, the improvement comprising carrying out said heating step by supporting the glass sheet opposite a first array of heating elements while maintaining protions of the tongs extending beyond the periphery of the glass sheet opposite a second array of heating elements, no portion of the glass sheet being located directly opposite said second array of heating elements, and controlling the energy inputs to the first and second arrays of heating elements independently so as to heat at a higher average rate in the region opposite the second array than in the region opposite the first array, thereby alleviating the occurrence of tong vents arising from a temperature difference between the tongs and the glass sheet.

6. An apparatus for heating glass sheets vertically hung from tongs, comprising:

a furnace having a narrow, vertically elongated heating chamber adapted to receive a vertically hanging glass sheet, arrays of heating elements along the sides of said heating chamber arranged in opposed pairs to form a plurality of heating zones, a first of said heating zones being disposed directly below a second of said heating zones, conveyor means for passing the glass sheet through said heating chamber and carrying glass-gripping tongs at an elevation where the lower, glass-gripping portions of the tongs are opposite the first heating zone while upper portions of the tongs beyond the periphery of the glass sheet are opposite the second heating zone, and means to

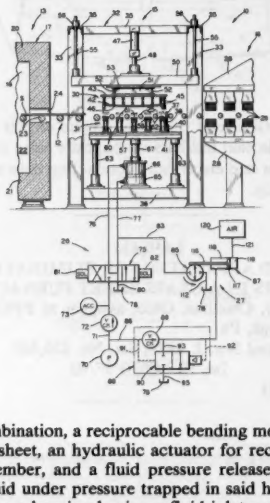
control the rate of heating in each of the heating zones independently.

4,119,427

HYDRAULIC SYSTEM FOR GLASS BENDING APPARATUS WITH PRESSURE RELEASE ASSEMBLY

Robert G. Revells, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Dec. 27, 1977, Ser. No. 864,426
Int. Cl.² C03B *23/02*
U.S. Cl. 65—159 **12 Claims**



1. In combination, a reciprocable bending member for shaping a glass sheet, an hydraulic actuator for reciprocating said bending member, and a fluid pressure release means for exhausting fluid under pressure trapped in said hydraulic actuator including a housing having a fluid inlet connected to said fluid under pressure in said actuator and a fluid outlet connected to exhaust, a normally closed valve means in said housing for controlling the flow of said fluid under pressure from said fluid inlet to said fluid outlet, means for actuating said valve means to establish communication between said fluid inlet and said fluid outlet, a control cylinder having a movable member therein defining a chamber on one side of said movable member in said cylinder, said actuating means operatively connected to said movable member, said chamber being connected to and reflecting the hydraulic pressure in a main line pressure supply conduit, said movable member being responsive to a substantial pressure reduction in said chamber as a result of a pressure failure in said main line supply conduit to initiate operation of said actuating means and effect evacuation of said fluid under pressure from said actuator.

4,119,428

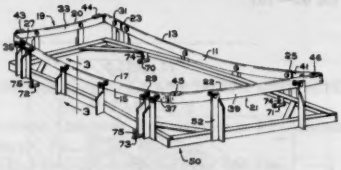
APPARATUS FOR BENDING GLASS SHEETS

Willie G. DeAngelis, Brackenridge, and Edward R. Crowe, Arnold, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 716,416, Aug. 23, 1976, abandoned. This application Aug. 25, 1977, Ser. No. 827,523
Int. Cl.² C03B *23/02*
U.S. Cl. 65—287 **6 Claims**

1. An outline bending mold for shaping glass sheets by the gravity sag method comprising:

a horizontally extending shaping rail substantially enclosing an area and presenting narrow, upwardly facing shaping surfaces corresponding in outline and contour to marginal portions of the bent glass sheet, the rail sections on a first and second opposed sides of the enclosed area having long, concavely arcuate shaping surfaces, and a pair of glass supporting members rigidly affixed outside the enclosed area to the rail section on a third side of the enclosed area, said supporting members being positioned to underlie marginal portions of the lower major surface of a flat glass sheet loaded onto the mold for bending, each of said supporting members having a rounded upper surface extending above the elevation of the adjacent portion of the shaping surface on the rail so as to slidingly support



the glass sheet being bent slightly above the adjacent portion of the shaping surface when the glass sheet is flat and to permit the glass sheet to slide into supporting contact with the adjacent portion of the shaping surface after the glass sheet has begun to sag toward the final bent contour.

4,119,429

SOIL SUPPLEMENT

Donald E. Lovness, Stillwater, Minn., assignor to Judd Ringer Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 667,655, Mar. 17, 1976, abandoned. This application Jun. 20, 1977, Ser. No. 807,837
Int. Cl.² C05F *11/08*
U.S. Cl. 71—6 **15 Claims**

1. A soil supplement for addition to the soil around a potted plant, said soil supplement comprising:

a quantity of microorganisms and enzymes in an amount equal to at least 3% of the total quantity of the supplement, said microorganisms being present in an amount equal to at least 1% of the total supplement and said enzymes being present in an amount equal to at least the amount of microorganisms,

a quantity of materials rich in protein and carbohydrates in an amount equal to at least 75% of the total, and

a sequestering agent consisting of potassium citrate in an amount equal to from 7 to 15 percent for maintaining the remaining ingredients dispersed through the soil and preventing the settling thereof.

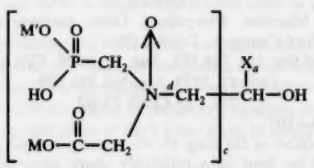
4,119,430

N-(2-HYDROXYALKYL) DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINE AND HERBICIDAL COMPOSITIONS CONTAINING SAME

Van R. Gaertner, Ballwin, and Philip C. Hamm, Glendale, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 714,054, Aug. 13, 1976, Pat. No. 4,047,927. This application May 18, 1977, Ser. No. 798,043
Int. Cl.² A01N *9/36*
U.S. Cl. 71—86 **16 Claims**

1. A compound of the formula



wherein X is selected from hydroxymethyl, lower alkoxymethyl and lower alkenoxymethyl, M is selected from hydrogen, lower alkyl and alkali metal, M′ is selected from hydro-

gen, lower alkyl, phenyl and alkali metal, *a* is zero or one, *c* is one or two, and *d* is zero or one, provided that the sum of *a* + *c* must equal two.

9. A phytotoxic composition comprising an inert adjuvant and a herbicidally effective amount of a compound of claim 1.

4,119,431

HERBICIDAL EFFECT OF A MIXTURE OF CIS AND TRANS ISOMERS OF S-ISOPROPYL-1-(5-ETHYL-2-METHYL-PIPERIDINECARBOTHIOATE)

Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 617,908, Sep. 29, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,485

Int. Cl.[2] A01N *9/22*

U.S. Cl. 71—94 **1 Claim**

1. A method of selectively controlling undesirable vegetation with respect to cotton by applying to the vegetation or the habitat thereof, a herbicidal composition of matter comprising a herbicidally effective amount of a mixture of cis and trans isomers of S-isopropyl-1-(5-ethyl-2-methylpiperidinecarbothioate) containing between about 60 and 65% of the cis isomer.

4,119,432

HERBICIDAL N-(DIALKYLCARBAMYL)-N-TRIFLUOROMETHYL-PHENYLCARBAMYL ALKYL DISULFIDES

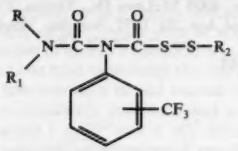
Edmund J. Gaughan, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 17, 1977, Ser. No. 797,717

Int. Cl.[2] A01N *9/12*; **C07C** *179/22*

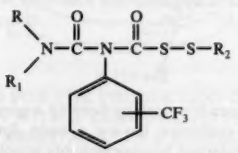
U.S. Cl. 71—98 **6 Claims**

1. A compound having the general structural formula



wherein each of R, R_1, and R_2 is a lower alkyl radical.

3. A method of controlling the growth of undesired vegetation which comprises applying to the locus where control is desired a herbicidally effective amount of a compound of the formula



wherein each of R, R_1, and R_2 is a lower alkyl radical.

4,119,433

3-HALO-5-(LOWER ALKOXY) PHENOXY ALKYL AMIDES

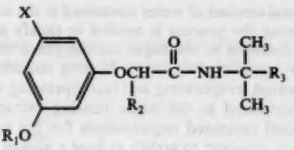
Don R. Baker, Orinda, and Francis H. Walker, Mill Valley, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 5, 1977, Ser. No. 812,957

Int. Cl.[2] A01N *9/20*; **C07C** *121/66, 103/22*

U.S. Cl. 71—118 **11 Claims**

9. A method for controlling undesirable vegetation comprising applying to said vegetation or the locus thereof an herbicidally effective amount of a compound having the formula



in which X is a halogen, R_1 is lower alkyl, R_2 is lower alkyl and R_3 is lower akyl, or lower alkynyl.

4,119,434

METHOD OF MAKING A BLISTERED SILICATE MATERIAL

Karl Kristian Kobs Krøyer, Engtrofften 3, DK—8620, Viby J., Denmark

Filed Jul. 25, 1977, Ser. No. 819,036

Claims priority, application Denmark, Jul. 28, 1976, 3401/76; Jan. 4, 1977, 17/77

Int. Cl.[2] C03C *3/22*

U.S. Cl. 106—306 **11 Claims**

1. A process of making blistered crystallizable glass material having a high content of wollastonite and a low content of cristobalite comprising the steps of continuously supplying part of a selected composition of raw materials suitable for forming a crystallizable glass material to the upper end of an inclined rotary kiln, keeping said rotary kiln at a temperature sufficient to melt the raw materials supplied to the upper end thereof during their passage therethrough to form a molten bath flowing downwards through the lower part of said rotary kiln, continuously injecting the remainder of said selected composition of raw materials comprising at least one calcium-containing additive from the lower end of said rotary kiln in the form of a blast striking the wall of said rotary kiln above said molten bath over the whole of the burning zone of said rotary kiln, thereby to protect the lining of said rotary kiln and gradually to be incorporated in said molten bath under conditions to cause blister formation and causing the molten material thus formed to flow off from the lower end of said rotary kiln.

4,119,435

PROCESS OF PREPARING SOYBEAN POLYSACCHARIDES

Yukihiro Nakao, Tondabayashi; Kasumi Miyashita, Kobe, and Jun Toda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 3, 1977, Ser. No. 803,304

Claims priority, application Japan, Jul. 30, 1976, 51-91957; Aug. 30, 1976, 51-103974

Int. Cl.[2] C13L *3/00*

U.S. Cl. 127—34 **22 Claims**

1. A method for producing soybean polysaccharides which comprises extracting a residue, which is obtained after separation of a soy milk from soybeans by an extractive separation technique, with an aqueous alkaline solution having a pH value not less than 11 and recovering the resultant solid matter containing the soybean polysaccharides.

4,119,436

SUGAR REFINING PROCESS

Milovan Bosnjak, Denver, Colo., assignor to Buttes Gas & Oil Co., Oakland, Calif.

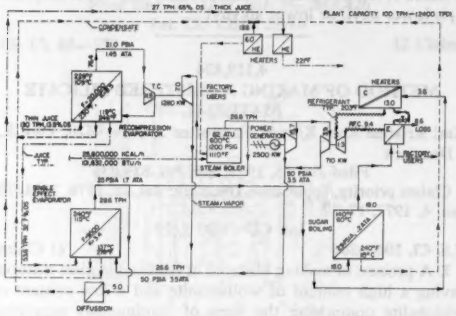
Filed May 23, 1977, Ser. No. 799,268

Int. Cl.[2] C13F *1/00*; **C13G** *1/02*

U.S. Cl. 127—61 **8 Claims**

6. In a process for refining sugar wherein an aqueous sugar bearing extract of the latter is concentrated to produce a concentrate having a preselected percentage of fixed solids and the sugar is crystallized by boiling a solution thereof using a predeterminable quantity and quality of steam as the source of heat, the improvement which comprises: estimating what propor-

tion of the total amount of water contained in the sugar bearing extract entering the process is needed to satisfy all the sugar boiling requirements of the sugar boiling phase thereof along with at least a part of the process heating requirements upon being evaporated, evaporating and recompressing the excess of the water contained in the sugar bearing extract over and above the total estimated requirements for the sugar boiling phase and that required to satisfy at least a part of the process



heating requirements in a recompression evaporator, and evaporating in a single effect evaporator the water contained in said proportion left over after the water contained in the remainder of the sugar bearing extract has been recompressed under conditions capable of producing steam of the quality and in the quantity predetermined as necessary to carry out all of the sugar boiling along with the chosen portion of the process heating.

4,119,437

METHOD FOR REMOVING Y_2O_3 OR SM_2O_3 CORES FROM CASTINGS

Ronald H. Arendt; Irvin C. Huseby, and Marcus P. Borom, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 9, 1977, Ser. No. 775,753

Int. Cl.² B08B *3/08, 7/04*

U.S. Cl. 134—3 **22 Claims**

1. A method for in-place leaching of ceramic materials in contact with a casting comprising an advanced superalloy material comprising

(a) preparing an aqueous weak acid leaching solution of a weak acid material which is one selected from the group consisting of NH_4Cl, NH_4HSO_4, CH_3COOH and equimolar CH_3COOH — CH_3COONa, wherein the molarity of the solution is from about 0.1 molar to about 15 molar;

(b) heating the solution to a predetermined temperature;

(c) placing an article consisting essentially of a ceramic material which is one selected from the group consisting of Y_2O_3 and Sm_2O_3 in the heated solution, and

(d) preferentially attacking the ceramic material with the heated solution to dissolve at least a part of the ceramic material into the heated solution.

13. A method for in-place leaching of ceramic materials comprising

(a) preparing an aqueous weak acid leaching solution of NH_4NO_3, wherein the molarity of the NH_4NO_3 solution may range from 0.1 molar to saturation;

(b) heating the solution to a predetermined temperature;

(c) placing an article consisting essentially of a ceramic material which is one selected from the group consisting of Y_2O_3 and Sm_2O_3 in the heated solution;

(d) preferentially attacking the ceramic material to dissolve at least a part of the ceramic material into the heated solution as a nitrate product;

(e) collecting at least the products of the leaching action as nitrates, and

(f) heating the collected nitrates at a temperature of approximately 800° C. to convert the nitrates to at least a ceramic oxide.

4,119,438

PROCESS AND APPARATUS FOR REMOVING STRAWS FROM BOTTLES

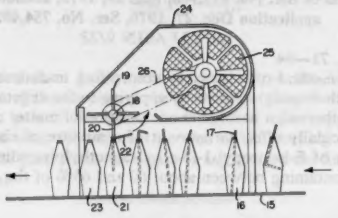
Hans Dewald, Berliner Ring 76, 6806 Viernheim, Germany

Filed Mar. 15, 1977, Ser. No. 777,851

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1976, 2648706

Int. Cl.² B08B *7/00*

U.S. Cl. 134—6 **10 Claims**



1. A process for removing straws from bottles, comprising the step of rotating a plurality of resilient blades into engagement with the straws without significant projection of said blades into said bottles, the impact of the blades against the straws removing the straws from the bottles.

4,119,439

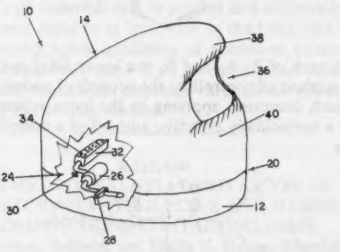
NAIL CLEANER

John L. Boucher, 4005 McLane Dr., Tampa, Fla. 33610

Filed Apr. 20, 1977, Ser. No. 789,196

Int. Cl.² B08B *3/02*

U.S. Cl. 134—183 **3 Claims**

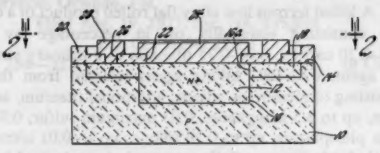


1. A nail cleaner for cleaning beneath a person's fingernails comprising an enclosure having a basin forming the base thereof and an enlarged hood detachably attached to said basin along the perimeter thereof, an aperture formed in said enlarged hood for placing the person's hand therethrough, said aperture being disposed rearward of the front of said enlarged hood and including a skirt extending inwardly from the inner periphery thereof to prevent splashing, and a cleaning solution delivery means comprising a pump having supply source of cleaning solution and a spray manifold disposed within said enclosure operatively coupled to the outlet of said pump, said spray manifold including a plurality of orifices to discharge a cleaning solution at a predetermined delivery pressure disposed laterally relative to said aperture and perpendicular to said aperture so as to permit cleaning beneath the person's fingernails within said enclosure whereby cleaning solution engages the crevices between the person's fingertips and fingernails to dislodge and dissolve dirt.

4,119,440
METHOD OF MAKING ION IMPLANTED ZENER DIODE

John W. Hile, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 622,081, Oct. 14, 1975, Pat. No. 4,051,504.
This application Nov. 26, 1976, Ser. No. 745,050
Int. Cl.[2] H01L *29/90, 21/265*
U.S. Cl. 148—1.5 1 Claim



1. A method of making a zener diode having an accurately predetermined breakdown voltage, said method comprising the steps of:

preparing a surface of a body of semiconductive material to receive a diffusant, said body having at least a portion of one conductivity type intersecting said surface, said portion having a resistivity of about 10–100 ohm-centimeters;

diffusing an opposite conductivity type impurity into an island-like surface region of said portion to form an opposite conductivity type island-like first surface region within said one conductivity type portion and thereby form a PN junction therebetween having a breakdown voltage in excess of a predetermined breakdown voltage, said impurity having a surface concentration during diffusion at least generally equal to the limit of solid solubility of said impurity in said semiconductive material;

irradiating a second surface region of said portion contiguous said first surface region with an accurately predetermined number of ions of a conductivity determining impurity of said one type to increase the one conductivity type impurity concentration in said second region of said portion by an accurately predetermined amount within the range of about 1×10^{16} to 1×10^{19} atoms per cubic centimeter of semiconductive material, resulting in a PN junction between said first and second regions that has an accurately predetermined breakdown voltage that is lower than the breakdown voltage of the PN junction between said first region and said body portion;

making a low resistance electrical connection to said first surface region; and

making a low resistance electrical connection to said second surface region.

4,119,441
METHOD FOR THE PRODUCTION OF N-DOPED SILICON WITH A DISH-SHAPED PROFILE OF SPECIFIC RESISTANCE IN A RADIAL DIRECTION

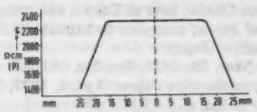
Ernst Haas, Erlangen; Karl Platzoeder, and Manfred Schnoeller, both of Haimhaussen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

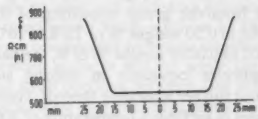
Filed Oct. 12, 1976, Ser. No. 731,440
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1975, 2552621
Int. Cl.[2] H01L *21/263*
U.S. Cl. 148—1.5 9 Claims

1. A method for the production of an n-doped silicon single crystal having a dish-shaped specific electrical resistance profile in a radial direction about a central axis of the crystal comprising the step of exposing a silicon single crystal to a pattern of radiation with neutrons in accordance with the reaction

$$30_{Si}(n,\gamma)31_{Si}\overset{\beta^-}{\rightarrow}31_P$$

to such an extent that a weaker doping-material concentration is present in marginal regions of the crystal due to the production of fewer hosphorus atoms and wherein a p-conductive silicon crystal is used as initial material for exposure to the



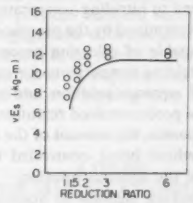


neutron radiation, said p-conductive silicon crystal having a region of elevated specific electric resistance at central portions.

4,119,442
PROCESS FOR MANUFACTURING A STEEL PRODUCT

Michihiko Nagumo; Tohru Inoue, both of Tokyo, and Naoki Okumura, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 1, 1976, Ser. No. 746,307
Claims priority, application Japan, Dec. 1, 1975, 50-143717; Jun. 25, 1976, 51-74390; Sep. 14, 1976, 51-110459
Int. Cl.[2] C21D *7/13*
U.S. Cl. 148—2 5 Claims



1. A process for the manufacture of a steel product from a cast slab wherein a cast slab of not more than 200 mm is subjected to rolling under the conditions that $2 \leqq D/d \leqq 6$ and that

$$\frac{\sqrt{R\,(h_1 - h_2)}}{\frac{h_1 + h_2}{2}} \geqq 0.8$$

per at least one rolling pass, wherein D is the thickness of the cast slab, d is the thickness of the product and h_1 is the thickness before rolling per each rolling pass; h_2 is the thickness after rolling per each rolling pass; and R is the radius of the roll.

4,119,443

METHOD FOR MANUFACTURING HARDENED MACHINED PARTS

Yoshihiko Abe; Isao Okabe, both of Tokyo, and Atsushi Shirota, Kamagaya, all of Japan, assignors to Mitsubishi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1977, Ser. No. 781,469
Claims priority, application Japan, Apr. 6, 1977, 51/37807
Int. Cl.[2] C23F *7/00*
U.S. Cl. 148—12.1 3 Claims

1. A method for manufacturing nitrided machined parts from steel particularly for use under light load conditions consisting essentially of the steps of:hot rolling or forging steel which consists essentially of 0.05 to 0.15 weight % C, up to 0.50 weight % of Si, up to 1.5 weight % of Mn, 0.30 to 1.0 weight % of Cr, 0.50 to 1.0 weight % of Mo, one or more elements selected from the group consisting of 0.10 to 0.40 weight % of V, 0.03 to 0.20 weight % of Ti, 0.03 to 0.20 weight % of Nb and 0.0005 to 0.0050 weight % of B, the balance being Fe including impurities inevitable in making steel; subsequently, and without further annealing thereof, cooling the hot rolled or forged steel in air from a temperature of 900° to 1,000° C; machining the air cooled steel; and subjecting the machined steel to a nitriding process at a temperature of 500° to 650° C for from two to eight hours.

4,119,444

PACK NITRIDING PROCESS FOR LOW ALLOY STEEL

Charles A. Stickels, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 693,406, Jun. 7, 1976, and a continuation-in-part of Ser. No. 641,006, Dec. 15, 1975, abandoned. This application Dec. 27, 1976, Ser. No. 754,663
Int. Cl.[2] C21D *1/06*
U.S. Cl. 148—16.6 11 Claims

1. A method of nitriding metal parts, comprising:

(a) preparing a granular packing medium which is thermally and mechanically stable at temperatures of at least 1100° F., has a high absorption capacity, and is substantially inert for the purposes herein,

(b) preparing an aqueous solution containing a predetermined concentration of a nitrogen-bearing agent selected to be solid and thermally stable when subsequently dehydrated and heated to nitriding temperatures, said thermal stability being determined by the presence of a decomposition product capable of releasing nascent nitrogen after being at said nitriding temperature for at least 4 hours,

(c) absorbing said aqueous solution into said packing medium to obtain a predetermined retention of the nitrogen-bearing agent therein, the amount of the agent retained in the packing medium being controlled by adjusting the concentration of the aqueous solution,

(d) drying said packing medium to dehydrate and remove the water therein, the resulting packing medium being impregnated with a thin residue of said nitrogen-bearing agent on substantially all grains of said medium, said residue forming a thin integrated solid shell network the average thickness of which is no greater than 0.001 inch,

(e) burying said steel part to be nitrided within said packing medium and heating said impregnated packing medium and part for a period of time sufficient to decompose said residue of said nitrogen-bearing agent for releasing nascent nitrogen bearing gas, and

(f) continuing said heating for a period of time during which continuous contact between said nascent nitrogen gas and said part surface provides for nitrogen enrichment to the steel to a predetermined depth.

4,119,445

HIGH STRENGTH ALLOY OF FERRITIC STRUCTURE

Richard A. Bosch, and John A. Straatmann, both of Poland, Ohio, assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Continuation of Ser. No. 141,947, May 10, 1971, abandoned, which is a division of Ser. No. 725,136, Apr. 29, 1968, Pat. No. 3,625,780. This application Jun. 29, 1973, Ser. No. 375,116
Int. Cl.[2] C22C *38/14*
U.S. Cl. 148—36 4 Claims

1. A killed ferrous low alloy flat rolled product of a composition consisting essentially of, in percentage by weight, 0.03–0.20 carbon, 0.04–0.35 titanium as a primary strengthening agent, 0.02–0.07 killing agent selected from the group consisting of aluminum, silicon, additional titanium, and zirconium, up to 1.5 manganese, 0.03 maximum sulfur, 0.015 maximum phosphorus, up to 0.30 silicon, up to 0.01 nitrogen, the remainder being essentially iron, and characterized by:

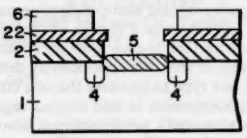
a fine dispersion of titanium carbonitride in a ferrite matrix, and a cold formability demonstrable by a capability of being bent through an arc, without cracking, to an inside diameter equal to the thickness of the product.

4,119,446

METHOD FOR FORMING A GUARDED SCHOTTKY BARRIER DIODE BY ION-IMPLANTATION

Sal Thomas Mastroianni, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 11, 1977, Ser. No. 823,797
Int. Cl.[2] H01L *21/265*
U.S. Cl. 148—1.5 7 Claims



1. A method for forming on a semiconductor substrate portion of first conductivity type a metal-semiconductor diode surrounded directly by a doped-guard ring of second conductivity-type and further surrounded directly by an insulating layer on said substrate, comprising ion-implanting said substrate through said insulating layer using said metal as a mask.

4,119,447

METHOD OF REORDERING FIBRES IN A WEB

Peter Manfrid Ellis, and Charles Martin Lester, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 4, 1977, Ser. No. 784,632
Claims priority, application United Kingdom, Apr. 8, 1976, 14369/76
Int. Cl.[2] B32B *31/20*
U.S. Cl. 156—73.1 3 Claims

1. A method of producing a non-woven fabric from at least one fibrous web containing at least some thermally bondable thermoplastic fibres, the spaces between the fibres in the web being substantially gaseous, comprising forwarding such web or webs into a gap of decreasing width between opposed faces of rigid members which are urged towards each other and at least one of which bears a relief pattern of lands and grooves on its face, and ultrasonically energizing at least one of the members to a degree insufficient to bond the bondable fibres in the entry region of the gap but sufficient to bond such fibres before the web leaves the gap, so that the fibres of the web are at first reordered by their different local degrees of ultrasonic excitation adjacent to the lands and grooves respectively, and

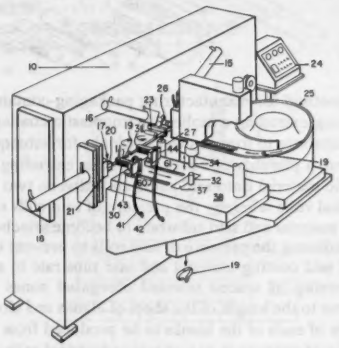
so that the bondable fibres are then segmentally bonded in situ by more intense ultrasonic excitation over the lands before leaving the gap.

4,119,448

APPARATUS AND METHOD FOR CONNECTING THE ENDS OF A CUT LENGTH OF RIBBON

Gerald P. Hermanson; David M. Rickel, both of Maitland, and Robert J. Carr, Winter Park, all of Fla., assignors to Dayron Corporation, Orlando, Fla.

Filed Aug. 19, 1977, Ser. No. 825,931
Int. Cl.² B29C *27/08*
U.S. Cl. 156—73.4 **18 Claims**



11. A method of cutting a length of material from a continuous length of material to a predetermined length and fusing the ends of said cut length of material together to form a continuous loop comprising the steps of:

clamping the end portion of a length of material on a continuous length of material in predetermined positions with a pair of clamping jaws;

cutting said end portion of said continuous length of material at a predetermined position;

looping said cut end portion of material by rotating said pair of clamping jaws in opposite direction to overlap said ends of said cut end portion of material

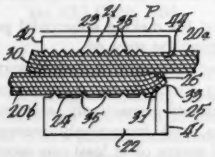
fusing said ends of said cut length of material together; and discharging said endless loop of material.

4,119,449

STRAPPING JOINT AND METHOD AND APPARATUS FOR FORMING SAME

Russell J. Gould, Arlington Heights, and Karl G. Adams, Schaumburg, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Division of Ser. No. 526,893, Nov. 25, 1974, Pat. No. 3,996,403. This application Jun. 23, 1976, Ser. No. 698,941
Int. Cl.² B23K *27/00*
U.S. Cl. 156—73.5 **14 Claims**



1. Apparatus for forming a friction-fused joint in overlapping portions of a thermoplastic strap, comprising: a pair of jaws having confronting strap gripping surfaces positioned to engage the overlapping strap portions therebetween, strap gripping means on each of said surfaces, the strap gripping surface of one of said jaws having a protrusion thereon which extends beyond the strap gripping means on said latter surface; means for effecting relative movement between said jaws generally perpendicular with respect to the overlapping strap portions so that the protrusion of said one jaw initially moves into engagement with the adjacent overlapping strap portion prior to engagement by the strap gripping means on said one jaw surface, whereby the facing surfaces of the overlapping strap portions in alignment with said protrusion are initially compressed into heat generating frictional engagement with one another before the remainder of the overlapping strap portions between said jaws are gripped by the strap gripping means on the remainder of said gripping surfaces, and means for effecting relative movement between said jaws in a direction generally parallel with said strap gripping surfaces both (a) while the overlapping strap portions in alignment with said protrusion are compressed to initiate interface melting between said compressed surfaces and (b) while the remainder of the overlapping strap portions between said jaws are compressed into heat generating frictional engagement with one another to expand interface melting to the facing surfaces of the remainder of the overlapping strap portions between said jaws.

12. The method of forming a friction-fused joint in overlapping portions of a thermoplastic strap surrounding an article, comprising the steps of: positioning said overlapping strap portions between a pair of opposed jaws, said jaws having complementary shaped strap gripping surfaces facing one another, each of said strap gripping surfaces having strap gripping means thereon and one of said strap gripping surfaces having a protrusion thereon which extends beyond the the strap gripping means on said latter surface; effecting relative movement between said jaws generally perpendicularly with respect to one another so that the protrusion of the one jaw initially engages the adjacent overlapping strap portion prior to engagement by the strap gripping means on the remainder of the strap gripping surfaces to compress the facing surfaces of the overlapping strap portions in alignment with the protrusion into heat generating frictional engagement with one another; continuing the generally perpendicular movement of the jaws to bring the strap gripping means on the remainder of the strap gripping surfaces into engagement with the overlapping strap portions; effecting relative movement between said jaws in a direction generally parallel with said strap gripping surfaces while the overlapping strap portions in alignment with the protrusion are compressed to initiate interface melting between the compressed surfaces; and continuing the generally perpendicular relative movement to compress the remainder of the overlapping strap portions between said jaws into heat generating frictional engagement with one another while continuing the relative movement in the direction generally parallel to the strap gripping surfaces to expand interface melting to the facing surfaces of the overlapping strap portions between sid jaws.

4,119,450

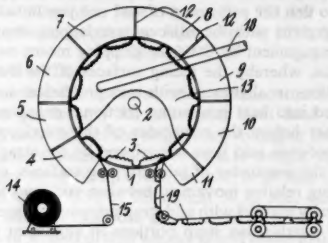
METHOD FOR MAKING A SANITARY PRODUCT

Carlo Bianco, Via Mezzanotte 104, Pescara, Italy

Filed Apr. 1, 1976, Ser. No. 672,810
Claims priority, application Italy, Apr. 4, 1975, 21990 A/75
Int. Cl.² B29C *17/04;* B32B *1/10*
U.S. Cl. 156—199 **5 Claims**

1. A method of making a sanitary product, particularly a diaper, comprising; providing a web of waterproof material, feeding said waterproof web to a surface with an indented shaping cavity having transverse corrugations and side walls, deforming a portion of said waterproof web by heating and applying pressure until said waterproof web portion conforms to the contour of said cavity and a pocket is formed in said web having transverse corrugations and sidewalls leaving a web surface around said pocket, advancing said waterproof web portion and web surface sequentially through a plurality of

zones in each of which the temperature and pressure are progressively higher than in the preceding zones, inserting absorbent material into said pocket so that it is held against lateral and transverse movement by said side walls, feeding a water-



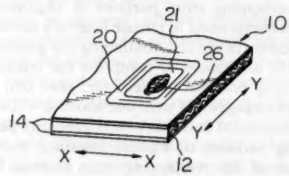
permeable covering web which is substantially coextensive with said waterproof web over said absorbent material and flush with said web surface, and sealing both of said webs to each other along at least a portion of said web surface.

4,119,451

METHOD OF PRESS-FORMING CORRUGATED PAPERBOARD AS SUBSTRATE OF CURVED TRIM BOARD

Toshihiko Fujii, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed Jul. 15, 1977, Ser. No. 816,275
Claims priority, application Japan, Jul. 15, 1976, 51-84624
Int. Cl.[2] B32B *31/20, 31/18*
U.S. Cl. 156—211 **11 Claims**



1. A method of producing a corrugated paperboard substrate of a trim board for application to the interior of cars, ships or buildings, the substrate having an aperture formed in a relatively small locally bulged or dented area for the installation of a separate article, the method comprising the steps of:

(a) making at least one linear notch in a flat board or corrugated paperboard to extend transversely to the ridges of the corrugated medium of said board in such a disposition that said at least one notch is entirely include in a relatively small area to subsequently be cut away to form said aperture;

(b) press-forming the notched board into a desired shape to have a locally bulged or dented area which includes said small area; and

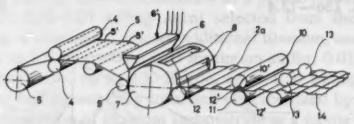
(c) forming said aperture in said bulged or dented area of the shaped board, whereby said at least one notch is entirely removed from the shaped board.

4,119,452

METHOD OF COATING AND CUTTING WRAPPER BLANKS

Erik Stolpe, Porvoo; Arto Honkanen, Helsinki, and Erkki Laiho, Kulloo, all of Finland, assignors to Pekema OY, Helsinki, Finland

Continuation of Ser. No. 690,036, May 25, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,949
Claims priority, application Finland, May 30, 1975, 751607
Int. Cl.[2] B29C *27/14*
U.S. Cl. 156—244.19 **2 Claims**



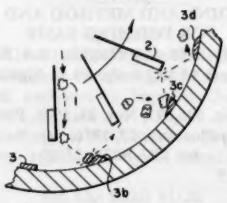
1. A method for manufacturing packaging-container blanks comprising extruding a molten thermoplastic coating material onto a substrate to form a sheet of blanks for subsequent separation into a plurality of container blanks, extruding said thermoplastic material onto said substrate between two revolving cylindrical rolls whereby the pressure of said rolls causes said coating material and said substrate to become attached to each other, reducing the pressure of said rolls to prevent the attachment of said coating material and said substrate to each other in a plurality of spaced selected elongated zones extending transverse to the length of the sheet of blanks and along at least one edge of each of the blanks to be produced from said sheet by means of grooves in one of said cylindrical rolls so located as to produce said reduction in pressure between said rolls in said selected zones, cutting transversely said thermoplastic material before the same has fully hardened by means of elongated knives located in at least some of said transverse grooves, and subsequently separating said sheet of blanks into a plurality of blanks.

4,119,453

PROCESS FOR RECLAIMING AND UPGRADING THIN-WALLED MALLEABLE WASTE MATERIAL

Mike Knezevich, R.R. #1, Box 311 A, Wabash, Ind. 46992

Filed Nov. 26, 1976, Ser. No. 745,609
Int. Cl.[2] B02C *13/14;* B22F *1/04*
U.S. Cl. 75—0.5 R **29 Claims**



1. The method for making spheroidal pellets of malleable material comprising the steps of:

reducing a feed material to a desired particulate size,

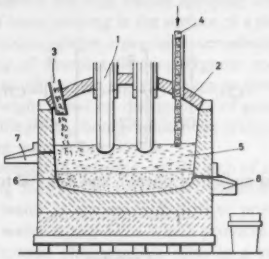
in a spherizing zone spherizing the material by repetitively and successively impactively accelerating, impactively decelerating, and impactively reaccelerating the feed material by means of at least one moving surface which throws the material through an air space against a contained target surface which does not contact the moving surface, the minimum distance between the moving surface and target surface being greater than the maximum dimension of the feed material particles,

moving the material being processed along a generally spiral path,
controlling the residence time in the spherizing zone by controlling the volume of conveying air,
continuously removing the spherized material through a sizing grating, and
separating the spherized material from the conveying air in a collection device.

4,119,454
SMELTING METHOD

Gero Rath, Mülheim, Germany, assignor to Demag AG, Duisburg, Germany

Filed Feb. 24, 1977, Ser. No. 771,840
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1976, 2608279
Int. Cl.[2] C22C *5/52*
U.S. Cl. 75—12 **7 Claims**



1. A method for melting steel scrap in the vessel of an electric arc furnace, comprising the steps of
(a) maintaining the furnace vessel stationary; the improvement characterized by the steps of
(b) continuously preheating scrap to be charged to said vessel;
(c) said preheating step being carried out at a temperature of within the range of between about 500° C. and 700° C. or above;
(d) continuously charging said preheated scrap material to said vessel;
(e) continuously maintaining a slag layer covering the bath in said vessel, at a thickness within the range of between about 200 and 800 millimeters;
(f) supplying heat for melting in said vessel by a plurality of non-consumable electrodes immersed in said slag layer; and
(g) continuously withdrawing product from said vessel.

4,119,455
METHOD OF RECOVERING IRON-BEARING BY-PRODUCT FLUE DUST

Boyd E. Cass, Ligonier; David W. Coate, and Joseph R. Quigley, both of Pittsburgh, all of Pa., assignors to Carad, Inc., Pittsburgh, Pa.

Filed Sep. 28, 1977, Ser. No. 837,386
Int. Cl.[2] C22B *7/02*
U.S. Cl. 75—25 **20 Claims**

1. The method of recovering wet iron-bearing flue dusts collected as a by-product sludge from metallurgical process wet scrubbers for recycling, comprising the step of, reducing the moisture content of the wet flue dust sludge to a level at which the wet dust is of a plastic consistency which will extrude into cohesive agglomerates, by continually mixing with the sludge in pug mill means a metallurgically compatible dry material and sufficient hydraulic cement to rigidly bond the mixture into a cohesive mass after curing, continually extruding the mixture through an extrusion die into cohesive agglomerates, and curing the extruded agglomerates at ambient temperatures.

4,119,456
HIGH-STRENGTH CAST HEAT-RESISTANT ALLOY

Donald Brian Roach; John Andrew Van Echo, and Albert Mangold Hall, all of Columbus, Ohio, assignors to Steel Founders' Society of America, Rocky River, Ohio

Filed Jan. 31, 1977, Ser. No. 763,905
Int. Cl.[2] C22C *30/00, 19/05, 38/44, 38/50*
U.S. Cl. 75—122 **5 Claims**

1. A high-strength, heat-resistant castable alloy consisting of about 0.2 to about 0.75 percent carbon, about 20.0 to about 30.0 percent chromium, from about 15.0 to about 60.0 percent nickel, up to about 2.0 percent manganese, up to about 2.5 percent silicon, from about 3.0 to about 10.0 tungsten, from about 0.1 to about 1.0 zirconium, with the balance being iron plus incidental impurities.

4,119,457
MOLYBDENUM-TITANIUM-ZIRCONIUM-ALUMINUM MASTER ALLOYS

Frederick H. Perfect, Wymossing, Pa., assignor to Reading Alloys, Inc., Robesonia, Pa., a part interest

Filed May 27, 1977, Ser. No. 801,087
Int. Cl.[2] C22C *28/00, 30/00, 16/00*
U.S. Cl. 75—134 N **3 Claims**

1. A molybdenum-titanium-zirconium-aluminum master alloy comprising from about 20 to about 25% molybdenum, from about 1 to about 5% titanium, from about 40 to about 50% zirconium, balance aluminum, said alloy containing not more than about 0.004%, by weight, nitrogen.

4,119,458
METHOD OF FORMING A SUPERALLOY

Warren F. Moore, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 14, 1977, Ser. No. 851,493
Int. Cl.[2] C22C *1/03*
U.S. Cl. 75—170 **10 Claims**

1. A method of forming a regular solution secondary eutectic nickel-base or cobalt-base superalloy — which contains, on a weight basis, 2–9% rhenium and less than about 0.8% titanium, and optionally an element selected from the group consisting of chromium, aluminum, tantalum, carbon, nickel, cobalt, tungsten, vanadium, molybdenum, niobium, hafnium, zirconium and boron — which comprises combining at a temperature above the eutectic melt temperature of the superalloy (1) a primary eutectic nickel-base or cobalt-base superalloy scrap containing, on a weight basis, 2–9% rhenium, and less than about 0.8% titanium, and optionally said elements; (2) a first master alloy containing the elements nickel, aluminum, vanadium, and carbon; (3) a second master alloy containing the elements nickel and carbon, and (4) elements selected from the group consisting of rhenium, titanium, chromium, aluminum, tantalum, nickel, cobalt, tungsten, molybdenum, niobium, hafnium, zirconium and boron including combinations thereof in alloy form.

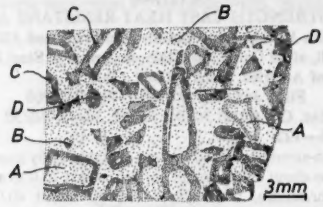
4,119,459
COMPOSITE BODY CONSISTING OF CEMENTED CARBIDE AND CAST ALLOY

Sven Karl Gustav Ekemar, Saltsjö-Boo, and Udo Karl Reinhold Fischer, Vallingby, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Feb. 1, 1977, Ser. No. 764,553
Claims priority, application Sweden, Feb. 5, 1976, 7601289
Int. Cl.[2] B22F *3/00*; C22C *29/00*
U.S. Cl. 75—243 **5 Claims**

1. Metallic body having great wear resistance in combination with excellent mechanical strength and toughness, the

body being composed of sintered cemented carbide and of cast iron-base alloy, the sintered cemented carbide being bonded within the cast alloy in the form of pieces, crushed parts,



powder or pressed bodies, characterized in that the cast alloy is an essentially graphitic cast iron having per se low wear resistance and hardness, its composition being so adjusted that the carbon equivalent is from 2.5 to 6.0 weight percent.

4,119,460

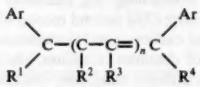
π-DEFICIENT N-HETEROAROMATIC CHEMICAL SENSITIZERS FOR HETEROGENEOUS ORGANIC PHOTOCONDUCTOR COMPOSITIONS AND METHODS

William E. Yoerger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1977, Ser. No. 800,587
Int. Cl.² G03G *5/04, 5/09*
U.S. Cl. 96—1 PC **21 Claims**

1. An electrophotographic element comprising an electrically conducting support bearing thereon a layer of a heterogeneous photoconductive insulating composition comprising particles of an organic photoconductor compound selected from the group consisting of (a) fused carbocylic ring compounds, (b) polyphenyl compounds having the structure

wherein n is an integer from 1 to 6; and (c) nitrogen-free, polyarylated compounds having the structure



wherein n is 0, 1, or 2 Ar is aryl; and R^1, R^2, R^3, and R^4 individually represent hydrogen, Ar, alkyl having 1 to about 10 carbon atoms, or alkoxy having 1 to about 10 carbon atoms, with the proviso that when n is 0, both R^1 and R^4 are Ar, and when both R^1 and R^4 are hydrogen, both R^2 and R^3 are Ar,

said photoconductor particles being dispersed in cellulose nitrate and chemically sensitized with a π-deficient N-heteroaromatic compound.

2. An electrophotographic process comprising applying a uniform charge to the surface of an electrophotographic element, imagewise exposing said charged surface to actinic radiation to form an electrostatic latent image, and developing said latent image to form a visible image, said electrophotographic element being an element as defined in claim **1**.

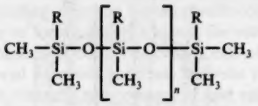
4,119,461

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY COMPRISING A SILICON OIL

Yutaka Yamada; Akira Kato, and Tohru Uchida, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 553,112, Feb. 26, 1975, abandoned, which is a continuation-in-part of Ser. No. 426,936, Dec. 13, 1973, abandoned. This application Apr. 18, 1977, Ser. No. 788,254
Claims priority, application Japan, Dec. 18, 1972, 47-126218
Int. Cl.² G03G *5/08, 5/04, 13/00;* **H01C** *13/00*
U.S. Cl. 96—1.8 **3 Claims**

1. A photosensitive material for electrophotography having a binder type photosensitive layer containing photoconductive materials of the inorganic type comprising a silicon oil having a viscosity of at least 6,000 cs when measured at 25° C. said silicon oil being represented by the following general formula:



wherein R is methyl or phenyl, and n is 700 to 2500.

4,119,462

COLOR PHOTOGRAPHIC DEVELOPER COMPOSITION

Harvey A. Hodes, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 24, 1977, Ser. No. 800,123
Int. Cl.² G03C *5/30*
U.S. Cl. 96—66.3 **3 Claims**

1. In a color photographic developer composition containing a substituted paraphenylenediamine as the color developing agent, the improvement of adding about 0.5 to 1.0 percent by volume of 2-anilinoethanol to the developer composition.

3. An improved color photographic developer composition according to claim **1** consisting of the following ingredients:

β -methanesulphonamidoethyl ethyl amino toluidine sesquisulfate hydrate	grams	7.5
Na_2SO_3	grams	2.0
Benzyl Alcohol	millimeters	5.0
NaOH	grams	15.0
$Na_2B_4O_7 \cdot H_2O$	grams	60.0
KBr	grams	1.5
2-anilinoethanol	millimeters	10.0
Water to make 1 liter		
pH is adjusted to 11.5		

4,119,463

PHOTOGRAPHIC BINDER COMPRISING ISOBUTYLENE-MALEIC ANHYDRIDE COPOLYMER

Shigeru Iguchi; Tamotu Iwata, and Tetsuo Yano, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Apr. 20, 1976, Ser. No. 678,715
Claims priority, application Japan, Apr. 24, 1975, 50/50078
Int. Cl.² G03C *1/76, 3/00*
U.S. Cl. 96—67 **10 Claims**

1. A method for producing a photographic light sensitive material which comprises a support and photographic layers coated thereon, the improvement comprising using, as a binder for forming the photographic layers, the PVA treated product obtained by heating an isobutylene-maleic anhydride copolymer, a styrene-maleic anhydride copolymer and polyvinyl alcohol in an aqueous solution.

4,119,464

PROCESS FOR HARDENING PHOTOGRAPHIC LAYERS CONTAINING GELATINE

Wolfgang Sauerteig; Wolfgang Himmelmann; Rudolf Meyer; Erwin Ranz, all of Leverkusen, and Willibald Pelz, Cologne, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 31, 1977, Ser. No. 802,001

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2625026

Int. Cl.[2] G03C *1/76, 1/30*

U.S. Cl. 96—68 12 Claims

1. Process for hardening photographic layers which contain gelatin in multilayer photographic films comprising silver halide emulsion layers and layers which contain gelatin and light-insensitive photographic layers containing ge... including the step of applying a solution a quick acting hardener which activates carboxyl groups, in quantities from 1 to 7% by weight and based on the quantity of gelatin, wherein the improvement comprises the step, before applying the quick acting hardener, of incorporating in the surface of a photographic layer which contains gelatin, a pre-hardener selected from the group consisting of complex forming organic and inorganic salts of aluminum, chromium and zirconium in quantities from 0.1 to 1% by weight based on the quantity of gelatin, to provide in the multilayered photographic films water and gelatin having a melting point above 35° C.

and then subsequently carrying out the step of applying the quick acting hardner in an aqueous solution containing additional water in amount sufficient to provide a total amount of water in said films which provides swelling of the multi-layered photographic films in a range of between 200 and 500 volumes percent

and maintaining the swelling for a period of 10 to 200 seconds

and then drying the multilayer photographic films at a temperature below 30° C.

4,119,465

DIAZO COPYING MATERIAL FOR SECONDARY ORIGINAL

Tsutomu Matsuda; Takeshi Maeda; Takeo Hirabayashi, and Nobuyoshi Watanabe, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 4, 1977, Ser. No. 793,779

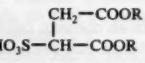
Claims priority, application Japan, May 13, 1976, 51/54626

Int. Cl.[2] G03C *1/38, 1/52*

U.S. Cl. 96—75 8 Claims

1. A method of manufacturing a diazo copying material for use in preparing a secondary original, which comprises the steps of coating onto a transparent or translucent support a dispersion in water of a composition consisting essentially of

(a) from 0.01 to 1.0 wt.%, based on the weight of said dispersion, of one or a mixture of anionic surface active agents having the formula



wherein M is Na or K, and R is alkyl having 1 to 20 carbons,

(b) from 0.1 to 20 wt.%, based on the weight of said dispersion, of a powder, and

(c) from 0.1 to 5 parts by weight, per 1 part by weight of (b), of a binding agent,

and then drying said dispersion to form a precoating layer on said support, then coating a photosensitive liquid containing a photosensitive diazonium salt onto said precoating layer and then drying said liquid to form a photosensitive layer on said precoating layer.

4,119,466

SENSITIZERS FOR PHOTOCROSSLINKABLE POLYMERS

James Albert Van Allan; Michael Paul Cunningham, both of Rochester; Donald Paul Specht, Spencerport, and Samir Yacoub Farid, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 678,805, Apr. 21, 1976, Pat. No. 4,062,686.

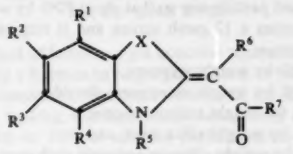
This application Aug. 31, 1977, Ser. No. 829,392

Int. Cl.[2] G03C *1/68, 1/52*

U.S. Cl. 96—115 R 15 Claims

1. In a photosensitive composition comprising a photocrosslinkable azide polymer and a sensitizer in an amount sufficient to sensitize said polymer;

the improvement wherein said sensitizer has the following formula:



wherein X is a sulfur or a selenium atom; R^1, R^2, R^3, and R^4 independently represent hydrogen, lower alkoxy of 1 to 4 carbon atoms or taken together R^1 and R^2, R^2 and R^3, R^3 and R^4 constitute the atoms needed to complete a fused benzo ring; R^5 represents lower alkyl of 1 to 4 carbon atoms; R^6 represents

where R^8 is furyl or thienyl; R^7 is furyl or thienyl.

4,119,467

CEMENT AND PROCESS FOR PRODUCING SAME

Boris Izrailovich Nudelman, Chilanzar, kvartal 8, 27, kv. 48; Marsel Yanovich Bikbau, massiv Junus-Abad, B-2, 21, kv. 58; Alexandr Sergeevich Sventsitsky, Severo-Vostok-2, 50, kv. 64; Anatoly Yokovlevich Gadaev, kvartal Ts-5, 41, kv. 24; Ada Mirovna Prikhozhan, Mukimi, 1, kv. 95, and Isaak Mozesovich Bun, Chilanzar, kvartal 8, 6a, kv. 19, all of Tashkent, U.S.S.R.

Filed May 17, 1977, Ser. No. 797,678

Int. Cl.[2] C04B *7/02*

U.S. Cl. 106—100 8 Claims

1. A cement consisting of alite, belite, calcium chloroaluminate, a highly-basic calcium chlorosilicate, calcium orthochlorosilicate and calcium chloroalumoferrite, the components being present in the following proportions, in parts by weight:

alite	1 to 50
belite	1 to 45
calcium chloroaluminate	30 to 1
highly-basic calcium chlorosilicate	75 to 5
calcium chloro-orthosilicate	55 to 5
calcium chloroalumoferrite	2 to 22.

4,119,468

PARTICULATE METALLURGICAL HOT TOPPING COMPOSITIONS AND METHOD OF USE

Donald E. Wiley, Conneaut, Ohio, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 89,026, Nov. 12, 1970, abandoned. This application Jan. 18, 1974, Ser. No. 434,461

Int. Cl.[2] B28B *7/36*

U.S. Cl. 106—38.22 **1 Claim**

1. A metallurgical hot topping composition that when placed on the exposed molten metal in an ingot mold reacts to form a self-supporting insulating crust and then exhibits secondary burn to prolong the feeding life of the hot top reservoir metal consisting essentially of:

6.3 to 6.8% by weight iron oxide;

2.0 to 26.1% by weight aluminum powder;

60.3 to 78.2% by weight washed aluminum dross having an unwashed particle size so that about 70% by weight of the dross passes a 12 mesh screen and is retained on a 150 mesh screen;

1.5 to 3.2% by weight gypsum;

2.0 to 2.9% by weight manganese dioxide;

0 to 7.8% by weight sodium nitrate;

0 to 1.9% by weight silica sand; and

0 to 1.0% by weight siliceous volcanic rock containing 70 to 80% by weight silica;

said composition being formulated so that the ratio of FeO + Al_2O_3 + SiO_2 to Al is between 1.48/1 to 3.85/1.

4,119,469

INSULATING CERAMIC SUBSTANCES HAVING CONTROLLED POROSITY AND THE METHOD FOR PREPARING THEM BY SINTERING

Henri Carbonnel, Antony, and Francois Chaminade, Etampes, both of France, assignors to Groupement pour les Activites Atomiques et Avancees, Le Plessis Robinson, France

Continuation of Ser. No. 692,075, Jun. 2, 1976, abandoned, Continuation of Ser. No. 471,746, May 20, 1974, abandoned. This application May 3, 1977, Ser. No. 793,341

Claims priority, application France, May 18, 1973, 73.18172; Nov. 30, 1973, 73 42882

Int. Cl.[2] C04B *21/00*

U.S. Cl. 106—40 R **16 Claims**

1. A molded, insulating sintered ceramic resistant to repeated thermal shocks and passive with respect to corrosive molten metals such as aluminum or steel, said ceramic consisting essentially of fine powders of oxides of at least one element chosen from groups III and IV of the periodic classification of elements with in excess of 30% by weight of dense, sintered fine compact grains of the same oxides used as said fine powders, said ceramic having a porosity between 25 and 50%.

4,119,470

CERAMIC COMPOSITION FOR MAKING STONEWARE PRODUCTS

Dieter Hums, Schrobenhausen, Fed. Rep. of Germany, assignor to Intong AB, Kumla, Sweden

Filed Jul. 8, 1976, Ser. No. 703,605

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1975, 2533774

Int. Cl.[2] C04B *33/00, 33/13*

U.S. Cl. 106—45 **24 Claims**

1. A ceramic composition suitable for quick firing to form a stoneware product which composition consists essentially of about 4 to 8% by weight water, a lime component and a clay component in a weight ratio of clay component to lime component of 95:5 to 40:60, said lime component consisting essentially of a hydrothermally cured, highly porous lime-sand product comprised mainly of quartz grains bound together with a binder comprising calcium silicate hydrates, said lime component being obtained by grinding a hydrothermally cured, highly porous, lightweight, lime-sand product having a major proportion of spherical pores.

4,119,471

OPTICAL GLASS

Fujio Komorita, Hachioji, and Muneo Nakahara, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Ohara Kogaku, Sagamihara, Japan

Filed Nov. 30, 1977, Ser. No. 856,459

Claims priority, application Japan, Dec. 17, 1976, 51-150848

Int. Cl.[2] C03C *3/08, 3/10*

U.S. Cl. 106—47 Q **1 Claim**

1. An optical glass consisting of a composition in weight percent of 8.5 to 20% B_2O_3, 10 to 19.5% SiO_2, the sum of said B_2O_3 and SiO_2 being 24 to 33%, 13 to 25% La_2O_3, 3 to 7.5% ZrO_2, 1 to 8% TiO_2, 5 to 26% ZnO, 25.5 to 37% BaO, 0 to 5% MgO, 0 to less than 6% CaO, 0 to 10% SrO, the sum of said ZnO, BaO, MgO, CaO and SrO being 36 to 53%, 0 to 5% PbO, 0 to 5% Al_2O_3, 0 to 2% Li_2O, 0 to 2% Na_2O, 0 to 2% K_2O, the amount of or the sum of the amounts of one or more ingredients of said Li_2O, Na_2O and K_2O being 0 to 2%, and 0 to 1% of at least one oxide of the group consisting of As_2O_3 and Sb_2O_3.

4,119,472

REBONDED FUSION-CAST AZS REFRACTORY GRAIN

Otto S. Brashear, Jr.; Clifford L. Hund, both of Louisville, Ky., and Thomas M. Wehrenberg, Jeffersonville, Ind., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 1, 1976, Ser. No. 719,364

Int. Cl.[2] C04B *35/48, 35/14*

U.S. Cl. 106—57 **10 Claims**

1. Refractory composition for making refractory articles consisting of:

(A) 25–60 wt.% fusion-cast alumina-zirconia-silica refractory coarse grain being at least 89 wt.% −6+20 Tyler mesh,

(B) 0–38 wt.% fusion-cast alumina-zirconia-silica refractory medium grain being at least 73 wt.% −10+35 Tyler mesh, and

(C) 30–50 wt.% at least one component selected from the group consisting of

(1) 0–50 wt.% fusion-cast alumina-zirconia silica refractory fine grain being at least 60 wt.% −35+325 Tyler mesh, and

(2) 0–30 wt.% at least one constituent selected from the group consisting of

(a) alumina being at least 90 wt.% −325 Tyler mesh, at least 98.5 wt.% Al_2O_3 and not more than 0.5 wt.% Na_2O, and

(b) −325 Tyler mesh chromic oxide being at least 95 wt.% Cr_2O_3. the fusion-cast alumina-zirconia-silica refractory having:

(i) a three-phase microstructure of interlocking crystals of corundum phase and baddeleyite phase with intercrystalline glassy phase therebetween, the glassy phase being about 15–30 vol.% of the alumina-zirconia-silica refractory, and

(ii) an oxide analysis consisting of 35–60 wt.% Al_2O_3 plus Cr_2O_3 with Cr_2O_3 ≦60 wt.% of Al_2O_3 plus Cr_2O_3, 25–50 wt.% ZrO_2, 10–18 wt.% SiO_2, 0.8–1.8 wt.% Na_2O plus K_2O, and up to 0.7 wt.% other ingredients.

4,119,473

REFRACTORY COMPOSITION FOR USE IN METALLURGICAL FURNACES

Bert Karl Gustaf Lundgren, Nynäshamn, and Gunnar Thaning, Täby, both of Sweden, assignors to Strabruken AB, Stockholm, Sweden

Filed Apr. 26, 1977, Ser. No. 791,115

Claims priority, application Sweden, May 3, 1976, 7605031

Int. Cl.[2] C04B *35/04, 35/06*

U.S. Cl. 106—58 **6 Claims**

1. In the known refractory composition that comprises

(1) at least one refractory material selected from the group consisting of burned dolomite, burned magnesite, and mixtures thereof, and

(2) a binder admixed with the refractory material so that the refractory material can be formed into the desired shape. the improvement which comprises utilizing as said binder an aromatic substance

(a) having an atomic ratio of carbon to hydrogen of least 0.8,

(b) having an average molecular weight (M_n) of at least 1500,

(c) having an initial boiling point of at least 300° C. at 760 mmHg,

(d) that is selected from the group consisting of resin products obtained by the oxidative polymerization of a mineral oil distillate and solvent extracts from a mineral oil distillate with a content of aromatically bound carbon corresponding to a VGC-value of at least 0.85 and having an average molecular weight of 150 – 600, said polymerization being effected with or without a catalyst while splitting-off water.

4,119,474

MICROCRYSTALLINE CELLULOSE AS EXTRUSION AID/COMBUSTIBLE FILLER FOR ALUMINA

Robert Henry Whitman, and William Austin Barber, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 13, 1977, Ser. No. 815,341

Int. Cl.[2] C04B *35/10*

U.S. Cl. 106—65 **2 Claims**

1. An alumina substrate consisting essentially of extrudates made from rehydratable alumina wherein the extrudates have the following properties:

Pore Volume (water)	0.9–1.2 cc./g.
Crush Strength	>7 lbs.
Crush Number	>5 lbs.
Bulk Density (compacted)	20–32 lbs./cu. ft.
Surface Area (B.E.T.)	100–130 m^2/g.
Shrinkage	<4%

4,119,475

SINTERING OF SILICON NITRIDE USING MG AND BE ADDITIVES

Svante Prochazka, Ballston Lake; Charles D. Greskovich, Schenectady; Richard J. Charles, Schenectady, and Robert A. Giddings, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 756,086, Jan. 3, 1977. This application Nov. 7, 1977, Ser. No. 849,178

Int. Cl.[2] C04B *35/58*

U.S. Cl. 106—73.5 **5 Claims**

1. A pre-shaped polycrystalline body having a density ranging from at least about 80% to about 100% of the theoretical density of silicon nitride, said body being comprised of silicon nitride, beryllium and magnesium, said silicon nitride ranging from the β-form to at least about 80% by weight of β-form-20% by weight α-form based on the total amount of said silicon nitride, said beryllium ranging in amount from less than about 0.1% by weight to less than about 2.0% by weight of said silicon nitride, said magnesium ranging in amount from less than about 0.5% by weight to less than about 4.0% by weight of the silicon nitride, said polycrystalline body according to X-ray diffraction analysis ranging from a single phase body to one comprised of a primary phase and a secondary phase.

4,119,476

METHOD OF PRODUCING GAS DEVELOPING AGENT FOR CELLULAR CONCRETES

Boris Vasilievich Grishin, ulitsa Sevastopolskaya, II, kv. 51, Kuibyshev, U.S.S.R.

Continuation of Ser. No. 474,143, May 28, 1974, abandoned, which is a division of Ser. No. 228,735, Feb. 23, 1972, abandoned. This application Dec. 10, 1976, Ser. No. 749,443

Int. Cl.[2] C04B *21/02*

U.S. Cl. 106—87 **6 Claims**

1. A method of forming a gas concrete comprising the steps of: separating a fraction having a particle size of from 0.3 to 1.2 mm from aluminium production wastes in the form of slag obtained in making standard aluminium alloys, the fraction containing up to 70% of metallic particles of an aluminium-based alloy; grinding the separated fraction in a neutral atmosphere until a ground fraction having a particle size of from 2 to 5 microns is obtained; and mixing the ground separated fraction with a gas concrete mixture.

4,119,477

SIZE COMPOSITIONS FOR GLASS FIBER REINFORCED CEMENTITIOUS PRODUCTS

Eleanor B. Cohen, Granville; William N. Stassen, and James C. Wintgens, both of Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 29, 1977, Ser. No. 820,200

Int. Cl.[2] C04B *31/06;* **C08L** *7/00*

U.S. Cl. 106—99 **15 Claims**

1. A plurality of filaments, at least a portion of the filaments' surfaces being in contact with the residue produced be evaporating water from an aqueous size composition consisting essentially of the following in weight percent: from 2 to 20% of an elastomer, from 0.05 to 5% of a silane from 0.05 to 5% of acetic acid, and from 0.05 to 5% of an emulsifiable lubricious tertiary fatty acid amine having the formula

$$R-\underset{\underset{O}{\|}}{C}-NR_2$$

where R is a fatty acid group and R_2 is a lower alkyl group, and the remainder being water.

4,119,478

PIGMENT COMPOSITION

George Heddle Robertson, Paisley, Scotland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 12, 1977, Ser. No. 758,622

Claims priority, application United Kingdom, Jan. 16, 1976, 1676/76

Int. Cl.[2] C09C *3/08*

U.S. Cl. 106—288 Q **10 Claims**

1. A pigment composition comprising a pigment and a colourless compound containing one or more basic nitrogen atoms directly attached to a carbon atom in a pyridine or benzimidazole ring system and having one or more urea or urethane groups.

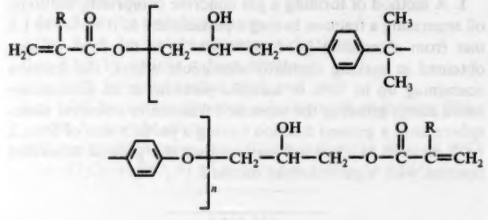
4,119,479
METHOD FOR MANUFACTURE OF LAMINATES WHICH ARE USEFUL AS PACKAGING MATERIALS

Robert Franklin Williams, Jr., Webster, and Chen-i Lu, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 694,758, Jun. 10, 1976. This application Jun. 23, 1977, Ser. No. 809,499
Int. Cl.[2] B29C *19/02;* C09J *1/00*
U.S. Cl. 156—272 6 Claims

1. A method of making a heat-sealable laminate which comprises:

(1) forming a sandwich comprising (a) a layer of metal foil, (b) a layer of thermoplastic polymer, and (c) an interlayer between said layer of metal foil and said layer of thermoplastic polymer composed of a radiation-curable composition comprising an acrylic monomer and an acrylated epoxy resin of the formula:



wherein R is a hydrogen atom or a methyl group and *n* is 1 to 20, and

(2) irradiating said interlayer through said layer of thermoplastic polymer to cure said interlayer and bond it to said layer of metal foil and said layer of thermoplastic polymer.

4,119,480
METHOD OF MANUFACTURING THICK-FILM CIRCUIT DEVICES

Yusaku Nishi, and Hideo Fujii, both of Ome, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 10, 1977, Ser. No. 795,446
Claims priority, application Japan, May 13, 1976, 51-54532; May 13, 1976, 51-54533
Int. Cl.[2] B05D *3/06*
U.S. Cl. 156—272 13 Claims

1. A method of manufacturing a thick-film circuit device comprising:

depositing a paste material for thick-film circuit use all over the effective surface area of a substrate and drying the paste material to evaporate a thinner contained in the paste material to make the paste material porous;

depositing a photosensitive resin on the paste material and drying the resin to partially diffuse the resin into the porous material;

exposing the photosensitive resin selectively to light;

removing the unnecessary parts of the photosensitive resin and of the paste material; and

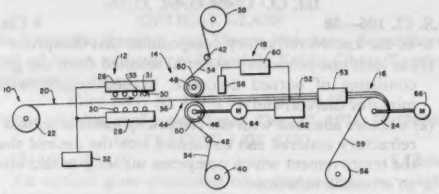
firing the paste material attached to the substrate.

7. A method of manufacturing thick-film circuit devices which comprises using a photosensitive resin to form a predetermined thick-film paste pattern and then firing said paste pattern which comprises depositing a photosensitive resin on a substrate; exposing said photosensitive resin selectively to light; removing the unnecessary parts of said photosensitive resin thereby forming openings; filling a paste material for thick-film circuit use into the openings from which said photosensitive resin was removed; and then removing the remaining photosensitive resin and firing the filled paste material.

4,119,481
FUSION LAMINATED HIGH-TEMPERATURE FABRIC

Don A. Beckley, Newport Beach, Calif., assignor to Hitco, Irvine, Calif.

Filed Nov. 5, 1976, Ser. No. 739,039
Int. Cl.[2] B29C *27/04*
U.S. Cl. 156—272 12 Claims



1. A method of coating the surface of a high heat capacity, woven, inorganic, refractory fabric with a thermoplastic film having a lower heat distortion temperature comprising the steps of:

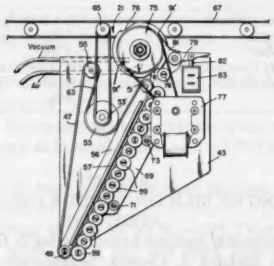
applying infra-red radiation to a surface of said fabric at a wavelength having high absorptance by said surface to heat the surface to a temperature above the softening temperature of the thermoplastic film;

applying the thermoplastic film directly to the heated surface and softening the inner surface of the film without softening the outer surface of the film and pressure bonding the inner surface of the film to the surface while at said temperature by passing the fabric-film assembly between the nip of a pair of unheated nip rolls.

4,119,482
APPARATUS FOR SELECTIVELY PRINTING AND APPLYING LABELS TO ARTICLES OF DIFFERENT SIZES AND SHAPES

William F. Bennett, Cypress, Calif., assignor to Marketing Information Systems Incorporated, Long Beach, Calif.

Filed Oct. 20, 1976, Ser. No. 734,088
Int. Cl.[2] B65C *9/28, 9/42*
U.S. Cl. 156—351 6 Claims



1. Apparatus for printing and applying labels to articles, said labels having adhesive coated side and an indicia receiving side, said apparatus comprising:

(A) Conveyor means for transporting said articles along a predetermined path;

(B) Printing means for selectively printing any desired indicia on the indicia receiving side of individual labels;

(C) Label applicator means having a label receiving surface;

(D) And means for moving said labels from said printing means to said label receiving surface of said applicator means comprising:

(1) A plurality of label guide rollers disposed between said printing means and said applicator means, said label

guide rollers being adapted to contact said adhesive-coated side of said labels;

(2) And a movable belt adjacent said plurality of label guide rollers and co-extensive therewith, said belt being adapted to contact the indicia receiving side of said labels.

4,119,483
METHOD OF STRUCTURING THIN LAYERS

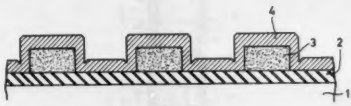
Hubertus Hübsch, Hamburg; Ursula Convertini, Borstel-Hohenraden; Heinz Dimigen, Hamburg, and Holger Lüthje, Halstenbek, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 590,969, Jun. 25, 1975, abandoned. This application Feb. 8, 1977, Ser. No. 766,662

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1974, 2436568

Int. Cl.² B44C 1/22; B29C 17/08

U.S. Cl. 156—655 **15 Claims**



1. A method of providing a structure comprising a certain thin layer, comprising the steps of:

(a) providing a substrate having a surface;

(b) providing directly on said substrate surface a support layer;

(c) providing a mask layer of photolacquer material on said support layer, said mask layer locally masking said support layer, said support layer being characterized by a relatively low adhesiveness for said photolacquer material, with such characteristic remaining substantially unchanged after the hereinafter mentioned heat treatment;

(d) providing said certain thin layer on said mask layer and exposed parts of said substrate surface;

(e) heating said mask layer in a certain temperature range such that the chemical reaction capacity thereof is unaffected in a detrimental manner, said temperature range being above the flow limit of said photolacquer but below such temperature at which "cross-linking" of the photolacquer is produced; and

(f) dissolving said masking layer and removing parts of said certain thin layer disposed thereon, whereby the remaining parts of said certain layer have a desired pattern.

4,119,484
METHOD FOR PRODUCING A DESIGN ON A FLAT OR ARCUATE SURFACE

Murray M. Schiffman, Westport, Conn., assignor to MBI, Inc., Westport, Conn.

Continuation-in-part of Ser. No. 733,711, Oct. 18, 1976, and Ser. No. 729,764, Oct. 5, 1976. This application Jan. 7, 1977, Ser. No. 757,505

Int. Cl.² B44C 1/22

U.S. Cl. 156—659 **13 Claims**

1. A method of producing a polar-coordinate design on a flat image surface from a rectangular-coordinate design, comprising:

(a) forming the design in undistorted rectangular-coordinate form upon a flat transparency;

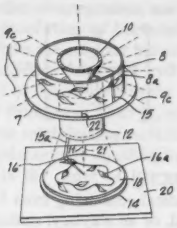
(b) forming the flat transparency into a cylindrical shape;

(c) simultaneously exposing images of the transparency to radially and inwardly directed light;

(d) redirecting the light passing through the transparency perpendicular to the radial light paths whereby corresponding images of the design are projected in a column and in polar-coordinate form;

(e) providing the flat image surface with a photosensitive coating;

(f) disposing the flat image surface substantially perpendicular to the light in the column and with its center coincident



with the axis of the columnated projection, such that the design image is exposed in distorted polar-coordinate form upon the photosensitized image surface; and

(g) processing the exposed coating on the flat image surface to selectively produce the design upon the surface.

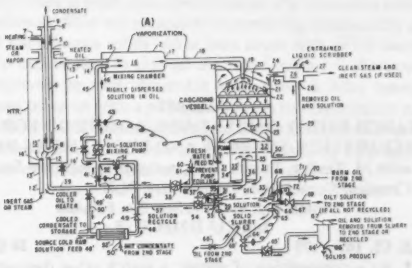
4,119,485
HEAT EXCHANGERS AND EVAPORATORS

Ransome W. Erwin, Ogden, Utah, assignor to Austral-Erwin Engineering Company, Houston, Tex.

Division of Ser. No. 306,183, Nov. 14, 1972, Pat. No. 3,891,496. This application May 29, 1975, Ser. No. 581,849

Int. Cl.² B01D 1/00

U.S. Cl. 159—28 B **7 Claims**


(A)
VAPORIZATION
CONDENSATE
HEATED OIL
MIXING CHAMBER
CASCADING VESSEL
ENTRAINED LIQUID SCRUBBER
CLEAN STEAM AND INERT GAS (IF USED)
REMOVED OIL AND SOLUTION
WARM OIL FROM 2ND STAGE
OILY SOLUTION TO 2ND STAGE (IF ALL NOT RECYCLED)
OIL AND SOLUTION REMOVED FROM SLURRY TO 2ND STAGE OR RECYCLED
SOLIDS PRODUCT
COOLED OIL TO HEATER
COOLED CONDENSATE TO STORAGE
SOURCE COLD FEED SOLUTION FEED
HOT CONDENSATE FROM 2ND STAGE
OIL FROM 2ND STAGE

5. Apparatus for effecting heat transfer of fluids, at least one of which fluids contains dispersed and/or dissolved solids, said apparatus having one or more liquid contacted surfaces which surfaces are (1) preferentially oil wettable and (2) substantially zero water adsorbent, and means for continuously supplying to said contacted surface or surfaces an organic liquid which is immiscible with the fluid contacting said surface(s), to prevent adherence of solids thereto, wherein the fluid contacted surface or surfaces comprise FEP.

4,119,486
PROCESS FOR BLEACHING WOOD PULP WITH OZONE IN THE PRESENCE OF A CATIONIC SURFACTANT

Robert C. Eckert, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 604,725, Aug. 14, 1975, abandoned. This application Dec. 2, 1976, Ser. No. 746,845

Int. Cl.² D21C 9/10

U.S. Cl. 162—65 **15 Claims**

1. A process for bleaching wood pulp comprising the steps of:

(a) mixing a low consistency wood pulp slurry with 0.01%

to 1.0% cationic surfactant by weight based on ovendried pulp, said slurry comprising from 0.1% to 10% by weight of ovendried wood pulp and having a pH range from 1 to 7 and, said cationic surfactant having a formula:

wherein,

R is CH_3 or CH_2CH_3,

R_1 is an alkyl radical containing from 3 to 15 carbon atoms, an aryl radical, or an alkylaryl radical and

X is a halogen; and

(b) introducing ozone gas into said wood pulp slurry containing said cationic surfactant for a time effective to bleach said wood pulp.

4,119,487

STARCH ETHER DERIVATIVES, A METHOD FOR THE PREPARATION THEREOF AND THEIR USE IN PAPER

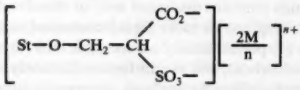
Martin M. Tessler, Edison, N.J., assignor to National Starch & Chemical Corporation, Bridgewater, N.J.

Filed Sep. 6, 1977, Ser. No. 830,422

Int. Cl.² D21H *3/28*

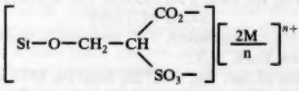
U.S. Cl. 162—175 **24 Claims**

1. As a composition of matter, a starch ether derivative of the general structure:



wherein St-O- represents a starch molecule, M is a cation, and *n* is the valence number of M.

19. A paper containing pigment and alum and having dispersed therein as a pigment retention aid a starch ether derivative of the general structure:



wherein St-O- represents a starch molecule, M is a cation, and *n* is the valence number of M, wherein said paper is prepared from a papermaking stock containing more than 4% alum by weight of dry pulp and from about 0.05 to 2.0% of said starch derivative by weight of dry pulp.

4,119,488

NUCLEAR REACTOR FUEL ELEMENT EMPLOYING ZR_2NI AS A GETTER METAL

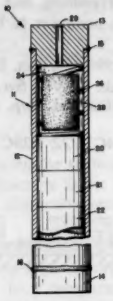
Aldo Barosi, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Division of Ser. No. 670,953, Mar. 26, 1976, Pat. No. 4,071,335. This application May 2, 1977, Ser. No. 792,854

Claims priority, application Italy, Apr. 10, 1975, 22211 A/75

Int. Cl.² G21C *3/02*

U.S. Cl. 176—68 **9 Claims**



1. A nuclear reactor fuel element comprising:

A. a container defining a chamber,

B. a fissionable material in the chamber,

C. a getter metal within the chamber, said getter metal consisting essentially of Zr_2Ni

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4,119,489

METHOD OF USING NUCLEAR REACTOR FUEL ASSEMBLY

Kenichi Itoh, Hitachi; Katsutoshi Shinbo, Katsuta, and Minoru Watahiki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 8, 1976, Ser. No. 647,455

Claims priority, application Japan, Jan. 8, 1975, 50/4423

Int. Cl.² G21C *3/30*

U.S. Cl. 176—76 **7 Claims**

1. A method of using a nuclear fuel assembly having a plurality of tubular fuel elements grouped together at fixed distances from each other to form a plurality of bundles of fuel elements, with each such bundle having a plurality of fuel elements, an upper tie plate provided at the top of each bundle of fuel elements to support the top thereof, a lower tie plate provided at the bottom of each bundle of fuel elements to support the bottom thereof, a cooling fluid conducting tubular channel having a uniform cross-section provided around the external surface of each bundle of fuel elements, combined together to form a nuclear fuel reactor core and being fixed in a reactor

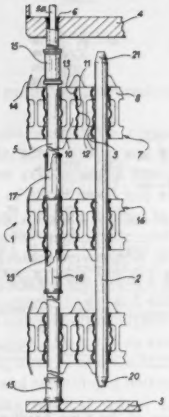
vessel, comprising the steps of: pulling out a tubular channel from the nuclear fuel assembly in an axial direction after a predetermined operating period; turning the pulled out channel upside down; axially inserting the turned channel in its upside down orientation into the fuel assembly; and fixing the inserted channel in said fuel assembly, whereby the distortions occurring within normal operation of said assembly are more evenly distributed along the length of said channel during its life.

4,119,490

NUCLEAR FUEL ASSEMBLY

Jacques Delafosse, Gif-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 22, 1976, Ser. No. 753,451
Claims priority, application France, Jan. 12, 1976, 76 00606
Int. Cl.² G21C *3/30*
U.S. Cl. 176—78 **3 Claims**



1. A nuclear fuel assembly comprising a bundle of clad fuel pins maintained in parallel relation at the nodes of a uniform lattice by means of a series of separate grids fitted with members which apply said grids against said fuel pins, and a rigid structure formed by two parallel end plates braced by tie-rods located at uniform intervals in the lattice of fuel pins at the nodes of said lattice, the diameter of said tie-rods being substantially the same as the diameter of said fuel pins, wherein the bundle of pins is associated with a single support grid rigidly fixed to the tie-rods, the other grids being adapted for sliding movement on said tie-rods and placed in uniformly spaced relation along the fuel assembly on each side of the support grid in the vertical direction so as to ensure that the elongations of the fuel pins take place from said support grid respectively towards the bottom and top plates.

4,119,491

ENZYME-FILTRATION CLARIFICATION OF XANTHAN GUM POLYMER SOLUTION

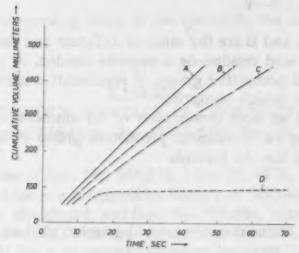
Scott L. Wellington, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 16, 1977, Ser. No. 797,093
Int. Cl.² C12D *13/04*
U.S. Cl. 195—7 **6 Claims**

1. In a xanthan gum polymer solution clarification process in which an aqueous xanthan gum polymer solution that contains bacterial cell bodies is reacted with a protease enzyme, a method for concurrently reducing the treatment time and the bacteria nutritive protein content of the treated solution comprising:

mixing the enzyme and the polymer within an aqueous xanthan gum polymer solution having a temperature from 60° to 70° C., a pH of from about 10 to 11 and containing from about 6,000 to 8,000 ppm of the polymer to initiate the enzymatic disintegration of the bacterial cell bodies;

before about one fourth of the time needed for complete bacterial cell bodies disintegration, and at least as soon as a predominate proportion of bacterial cell bodies have been separated from the polymer but are still substantially intact, terminating the enzymatic cell disintegration by adjusting the pH of the solution to the extent required to provide a pH of from about 10 to 11, contacting the solution with siliceous solids having surface areas and adsorbtivities at least substantially equaling those of a relatively fine sand sized in the order of 100 mesh, adjusting the



solution pH to from about 5–7, and filtering out the siliceous solids and adsorbed partially disintegrated bacterial cell bodies by flowing the liquid portion of the polymer solution through a filter that has relatively large effective pore sizes at least equivalent to those of a 10-micron teflon millipore filter but is capable of removing substantially all of the siliceous solids and at least about 80% of the bacterial cell bodies, so that (a) the filtering time is shortened relatively to that obtainable with either a filter having finer pores or with a polymer solution having a higher pH and (b) the so treated solution is substantially free of proteinaceous material formed by the enzymatic disintegration of bacterial cell bodies.

4,119,492

PROCESS FOR FERMENTATIVELY PRODUCING VITAMIN B_{12}

Ichiro Kojima; Hiroshi Sato, both of Yokohama, and Yasuo Fujiwara, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Japan

Filed Jan. 28, 1977, Ser. No. 763,539
Claims priority, application Japan, Feb. 5, 1976, 51-10824
Int. Cl.² C12D *5/06*
U.S. Cl. 195—28 VB **4 Claims**

1. A process for producing vitamin B_{12}, which comprises cultivating a vitamin B_{12}-producing microorganism of the species Arthrobacter hyalinus under aerobic conditions in a culture medium containing at least one compound selected from the group consisting of ethyl alcohol, n-propanol, 1-propanol and acetone, and separating vitamin B_{12} from the culture broth.

4,119,493
PROCESS FOR PRODUCING A PEPTIDE

Yoshikazu Isowa; Muneki Ohmori, both of Tokyo; Hideaki Kurita, Sagamihara; Tetsuya Ichikawa, Sagamihara; Masanari Sato, Sagamihara, and Kaoru Mori, Sagamihara, all of Japan, assignors to (Zaidanhojin) Sagami Chemical Research Center, Tokyo, Japan

Continuation of Ser. No. 734,010, Oct. 19, 1976, abandoned. This application Jun. 3, 1977, Ser. No. 803,350

Claims priority, application Japan, Oct. 23, 1975, 50-126877; Apr. 19, 1976, 51-43687

Int. Cl.[2] C12D *13/06*

U.S. Cl. 195—29 **11 Claims**

1. A process for producing a peptide having the formula:

X—A—B—Y

wherein A and B are the same or different and each represents an amino acid residue or a peptide residue, X represents an amino acid protective group, Y represents a carboxyl protective group, which comprises:

reacting an acid component of an amino acid or peptide having an N-terminal protective group or a salt thereof which has the formula

X—A—OH

with an amine component of an amino acid or peptide having a C-terminal protective group or a salt thereof which has the formula

H—B—Y

in the presence of metalloproteinase enzyme produced from microorganisms in an aqueous solution having a pH necessary to maintain the activity of said metalloproteinase enzyme.

4,119,494
IMMOBILIZATION OF ENZYMES IN AN ANHYDROUS MEDIUM

Gilbert Durand, and Pierre Monsan, both of Toulouse, France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 494,818, Aug. 5, 1974, abandoned. This application Dec. 20, 1976, Ser. No. 752,135

Int. Cl.[2] C07G *7/02*

U.S. Cl. 195—68 **9 Claims**

1. Process for fixing enzymes on supports comprising providing a solid support having groups which react with the enzymes to fix the enzyme to the support, reacting the enzyme with the support at a temperature within the range of more than 60° C. up to 120° C. in an anhydrous organic liquid in which both the enzyme and support are insoluble.

4,119,495
METHOD FOR PROCESSING ACTIVATED SLUDGE INTO USEFUL PRODUCTS

Vasily Dmitrievich Belyaev, pereulok Sivtsev Vrazhek, 33, kv. 5; Sergei Vladimirovich Chepigo, Leningradsky prospekt, 74, korpus 2-a, kv. 9, both of Moscow; Nina Ivanovna Korotchenko, ulitsa Furmanova, 14, Tomilino Moskovskoi oblasti; Alexandr Nikolaevich Mezentsev, K-482, korpus 345, kv. 37, Moscow; Olga Vasilievna Samokhina, Dmitrovskoe shosse, 29, kv. 187, Moscow; Alexandra Leonidovna Krasinskaya, Leningradsky prospekt, 78, kv. 278, Moscow; Vadim Nikolaevich Timkin, K-482, korpus 338-b, kv. 60, Moscow; Yaroslav Yaroslavovich Shkop, Tverskoi bulvar, 26, kv. 26, Moscow, and Alexei Olegovich Colubev, Kolokolnikov pereulok, 17/20, kv. 16, Moscow, all of U.S.S.R.

Filed Jan. 21, 1977, Ser. No. 761,253

Int. Cl.[2] C02C *1/02;* **A23J** *1/00;* **A23K** *1/00;* **C12B** *3/00*

U.S. Cl. 195—102 **8 Claims**

1. A method for processing activated sludge into useful products, which comprises subjecting a first portion of said activated sludge to hydrolysis at a pH of 0.01 to 6.0 and a temperature of 50° to 150° C., thus forming a solution of water soluble proteins, carbohydrates, mineral substances and vitamins, and a first precipitate which is acid, separating said solution of water-soluble proteins, carbohydrates, mineral substances and vitamins from said first precipitate, subjecting a second portion of said activated sludge to alkaline extraction at a pH of 9 to 13 and a temperature of 40° to 90° C., thus forming a solution of soluble proteins and another precipitate which is alkaline and separating said solution of soluble proteins from said other precipitate.

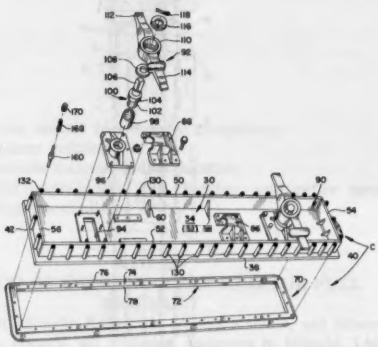
4,119,496
FABRICATED COKE OVEN DOOR

Patsie Carmen Campana, 2614 Sherwood Dr., Lorain, Ohio 44053

Filed May 11, 1977, Ser. No. 795,770

Int. Cl.[2] C10B *25/02*

U.S. Cl. 202—248 **18 Claims**



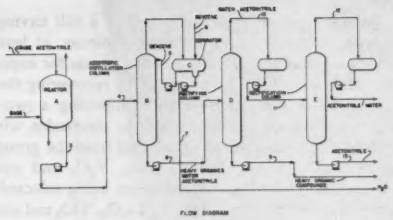
1. In a coke oven of the type having an elongated vertical opening in the front wall thereof with a door frame disposed about at least a portion of said opening, an elongated coke oven door adapted to be placed in a covering relationship with said opening and in a cooperative sealing relationship with said frame and further including means for releasably maintaining said door in position covering said opening and for urging said door toward said sealing relationship with said frame, the improvement comprising:

said door being fabricated from steel plate to including a main door plate having inner and outer planar faces, a pair of opposed side edges and a pair of opposed end edges with a portion of said inner face adapted to be closely spaced toward an engaging relationship with said frame; a steel side support plate rigidly affixed to said main door plate outer face adjacent each of said side edges and a steel end support plate rigidly affixed to said main door plate outer face adjacent each of said end edges, said side an end support plates extending generally normally outward from said outer face and forming a door support arrangement; and, a plurality of separate gusset members positioned generally symmetrically about the midpoint of said outer face and rigidly affixed thereto with each gusset member disposed to extend laterally across a portion of said outer face from one of said side plates in longitudinal alignment with a gusset member associated with the other of said side plates, whereby said fabricated coke oven door may be flexed during oven operation at elevated temperatures in response to the urging of said maintaining means so that said main door plate inner face will remain closely spaced toward an engaging relationship with said door frame as said frame is distorted due to exposure thereof to elevated oven temperatures and thereby maintain an effective seal between said oven door and frame.

4,119,497
PROCESS FOR THE PURIFICATION OF ACETONITRILE

Felipe Ocampo; Francisco Meza, and Francisco Aguirre, all of Mexico City, Mexico, assignors to Instituto Mexicano del Petroleo, Mexico City, Mexico

Filed Oct. 12, 1976, Ser. No. 731,633
Claims priority, application Mexico, Dec. 1, 1975, 162235
Int. Cl.[2] B01D *3/36;* **C07C** *121/18*
U.S. Cl. 203—29 **6 Claims**



1. A process for the purification of crude acetonitrile consisting essentially of:

(a) feeding said crude acetonitrile, comprising acetonitrile, hydrogen cyanide, acrylonitrile, and water, to a reactor:

(b) feeding a stream comprising a base selected from the group consisting of alkali metal and ammonium hydroxides, ammonia, and aliphatic amines to said reactor;

(c) reacting said crude acetonitrile and said base in said reactor at a temperature between 50° F. and 212° F. and at least atmospheric pressure to form a reaction mixture in which said hydrogen cyanide and said acrylonitrile are transformed into compounds of higher molecular weight;

(d) passing said reaction mixture to an azeotropic distillation column, removing most of said water from said column in an upper stream and removing a bottom stream from said column comprising residual water, said compounds of higher molecular weight, and said acetonitrile;

(e) passing said bottom stream to a first rectifying column, removing from said first rectifying column a bottom stream comprising said compounds of higher molecular weight, and removing from said first rectifying column an upper stream comprising water and acetonitrile; and

(f) passing said upper stream from said first rectifying column to a second rectifying column, removing from said second rectifying column a bottom stream of substantially pure acetonitrile, and removing from said second rectifying column an upper stream comprising said residual water and acetonitrile.

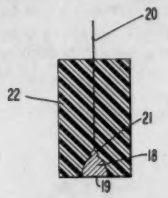
4,119,498
MONOCRYSTALLINE METAL ELECTRODE AND METHOD OF USE

Nils Erik Gunnar Edwall, Storskiftesvagen, S-145 60 Norsborg, and Göran Sven Eklund, Karl Martins vag 17, S-185 00 Waxholm, both of Sweden

Filed Jul. 12, 1977, Ser. No. 815,061
Claims priority, application Sweden, Jul. 13, 1976, 7607993
Int. Cl.[2] G01N *27/30, 27/56*
U.S. Cl. 204—1 T **5 Claims**

1. An electrode for the measurement of pH, P_{O_2} or P_{CO_2} in liquids, including a metal sensor in an insulating holder said metal sensor having a surface adapted to contact said liquids characterized in that the said metal is monocrystalline manufactured and arranged to provide only one plane crystal face for exposure to the said liquid.

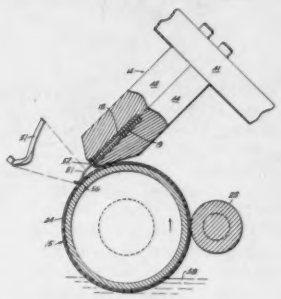
4. In a method for the measurement of pH, P_{O_2} or P_{CO_2} in a liquid wherein an electrode is exposed to the liquid, the improvement comprising using as the electrode the electrode of claim 1.



4,119,499
CONTINUOUS CONTACT PLATER PRODUCT

Charles Douglas Eidschun, Jr., 11004 64th Ter., N., Seminole, Fla. 33542

Continuation of Ser. No. 666,618, Mar. 15, 1976, Pat. No. 4,064,019, which is a continuation-in-part of Ser. No. 502,536, Sep. 3, 1974, abandoned, and Ser. No. 580,304, May 23, 1975, Pat. No. 4,036,705. This application Sep. 16, 1977, Ser. No. 833,890
Int. Cl.[2] C25D *5/02, 5/06, 7/00*
U.S. Cl. 204—15 **4 Claims**



1. A metallic electrical contact element having a discreet convex curvilinear surface portion intended for electrical contact, said surface having a localized conductive electrodeposited contact point thereon,

said contact being produced by providing a roller carrying an electrolyte on its periphery for plating said contact, positioning said metal contact element transversely to the axis of the roller with said periphery in tangential engagement with said contact, rotating said roller while passing an electric current between the same and said surface whereby a feather edged conductive electrical contact point is produced on said convex curvilinear surface.

4,119,500
PROCESS FOR ELIMINATING MAGNETISM OF SYNTHETIC DIAMOND GRAINS

Hiroshi Ishizuka, 19-2 Ebara 6-chome, Shinagawa-ku, Tokyo, Japan; Kazuo Suzuki, Chigasaki, and Shinichi Tamon, Fujisawa, both of Japan, assignors to Hiroshi Ishizuka, Tokyo, Japan

Filed Jul. 20, 1977, Ser. No. 817,420
Claims priority, application Japan, Jul. 19, 1976, 51-85159
Int. Cl.[2] C25D *15/00*
U.S. Cl. 204—16 **4 Claims**

1. A process for producing synthetic diamond grains for

electrodeposited abrasive tools, comprising the steps of heating in an inert gas atmosphere or in a vacuum synthetic diamond grains which have magnetic susceptibility because of ferromagnetic inclusions to a temperature between about 800° and about 1,300° C., cooling the resulting diamond grains to room temperature, subjecting the cooled diamond grains to a milling action to adjust the friability thereof ranging from 30 to 55 weight %/90 sec., and obtaining diamond grains with decreased magnetic susceptibility having a bulk density ranging from 1.75 to 1.90 g/cc.

4,119,501
ELECTROPLATING NICKEL USING ANODES OF FLATTENED NICKEL FORMS

Gordon Lloyd Fisher, Mahwah, N.J., and Ernest Lee Huston, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,644
Int. Cl.[2] C25D *3/12, 17/12*
U.S. Cl. 204—49 **8 Claims**

1. The process of electroplating, comprising: immersing in a nickel containing electrolyte an object to be plated and an anode basket containing a work-flattened nickel anode material, said work-flattened nickel anode material having been prepared from a pellet prepared by a carbonyl nickel process or a shot prepared from a molten nickel alloy bath, and said work-flattened nickel anode material being characterized by a capability for retention in said anode basket, an increased activity, and provision of a coarser plating residue; and imposing a current between said object to be plated and said anode basket.

4,119,502
ACID ZINC ELECTROPLATING PROCESS AND COMPOSITION

Donald A. Arcilesi, Mount Clemens, Mich., assignor to M&T Chemicals Inc., Stamford, Conn.

Filed Aug. 17, 1977, Ser. No. 825,402
Int. Cl.[2] C25D *3/22*
U.S. Cl. 204—55 R **6 Claims**

4. An aqueous acidic plating solution containing at least one zinc compound providing zinc cations for electroplating zinc, said zinc compound selected from the group consisting of zinc sulfate, zinc chloride and zinc sulfamate; chloride anions added as salts of bath compatible cations excepting ammonium; in the absence of complexing or chelating agents of organic nature; and containing as cooperating additives at least one alkyl propoxyethoxy polyether exhibiting the formula:

$$C_nH_{2n+1}—OC_3H_6)_{m_1}—(OC_2H_4)_{m_2}—OH$$

where n is an integer of from 6 to 14, m_1 is an integer of from 1 to 6, and m_2 is an integer of from 10 to 20, at least one aromatic sulfonate emulsifying agent, and at least one aromatic carbonyl compound.

4,119,503
TWO LAYER CERAMIC MEMBRANES AND THEIR USES

Placido Maria Spaziante, and Antonio Nidola, both of Lugano, Switzerland, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Nov. 28, 1977, Ser. No. 855,176
Claims priority, application Italy, Jul. 15, 1977, 25779 A/77
Int. Cl.[2] C25B *9/00, 1/00, 3/00, 13/04*
U.S. Cl. 204—59 R **28 Claims**

1. A two layer ceramic oxide membrane for electrolysis cells comprising a membrane having on the anodic side a layer of at least one oxide selected from the group consisting of Sb_2O_5, Bi_2O_5, MoO_3, WO_3, V_2O_5 and mixtures thereof and on the cathodic side a layer of at least one oxide selected from the group consisting of ZrO_2, Nb_2O_5, Ta_2O_5, TiO_2 and mixtures thereof.

6. An electrode structure comprising an electrically conductive substrate having on the side towards the electrodic gap a two layer ceramic oxide membrane having on the anodic side a layer of at least one oxide selected from the group consisting of Sb_2O_5, Bi_2O_5, MoO_3, WO_3, V_2O_5 and mixtures thereof and on the cathodic side a layer of at least one oxide selected from the group consisting of ZrO_2, Nb_2O_5, Ta_2O_5, TiO_2 and mixtures thereof.

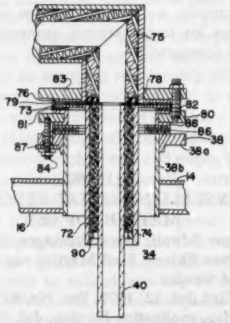
14. In an electrolysis cell comprised of a cell having provided with electrolyte inlet and outlet means, at least one electrode pair of an anode and a cathode, means for impressing a direct current on the cell and means for recovering the electrolysis products, the improvement comprising a two layer ceramic oxide membrane on one of the electrodes with the phase towards the anolyte being selected from the group consisting of Sb_2O_5, Bi_2O_5, MoO_3, WO_3, V_2O_5 and mixtures thereof and the phase towards catholyte being selected from the group consisting of ZrO_2, Nb_2O_5, Ta_2O_5, TiO_2 and mixtures thereof.

22. In an electrolysis process comprising electrolyzing an electrolyte between an anode and a cathode with a direct current, the improvement comprising providing one of the said electrode on its side toward the electrodic gap with a two phase ceramic oxide membrane of claim **1**.

4,119,504
NON-WETTABLE BARRIER TO PREVENT CONDUCTION OF ELECTRICAL CURRENT BY MOLTEN SALT FILM

Robert L. Hargis, Palestine, Tex., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed May 17, 1977, Ser. No. 797,775
Int. Cl.[2] C25C *3/00, 3/10*
U.S. Cl. 204—64 R **11 Claims**



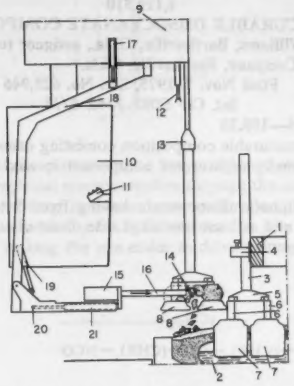
5. The method including producing metal by electrolysis in a molten salt bath, where portions of the molten salt bath condense in the form of a liquid film on a surface above the bath and wherein the improvement comprises interposing in said film an electrically insulating material which is not wet by the film, said material being in the form of a protrusion on said surface.

4,119,505

PROCESS AND DEVICE FOR CLEANING THE BUTTS OF WORN ANODES FROM AN IGNEOUS ELECTROLYSIS CELL

Pierre Baillot, and Pierre Berthet, both of Albertville, France, assignors to Aluminium Pechiney, Lyons, France

Filed Apr. 6, 1977, Ser. No. 784,963
Claims priority, application France, May 4, 1976, 76 13998
Int. Cl.[2] C25C *3/00, 3/06*
U.S. Cl. 204—67 5 Claims



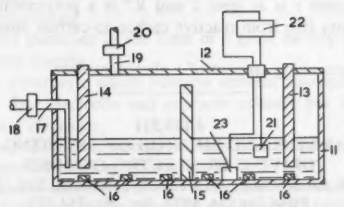
1. Process for ridding the worn anode elements of igneous electrolysis cells of covering solidified electrolyte crust in replacement of the anode comprising the steps of raising the worn anode vertically from the cell to a level above the surface of the cell, backing the raised anode from one side, aligning a percussion tool with the crust on the other side of the raised anode, moving the percussion tool towards contact with the crust of the raised anode, actuating the percussion tool rapidly to impact the crust to break the crust for release from the worn anode, and controlling such movement from a remote station.

4,119,506

FUELS

George Charles Bashforth, La Mondine, Eureka Avenue, Coast Road, St. Clement, Jersey, Channel Islands, Channel Islands

Continuation of Ser. No. 696,229, Jun. 15, 1976, abandoned, which is a continuation of Ser. No. 619,449, Oct. 3, 1975, abandoned, which is a continuation of Ser. No. 460,161, Apr. 11, 1974, abandoned. This application Dec. 1, 1977, Ser. No. 856,747
Claims priority, application United Kingdom, Apr. 12, 1973, 17608/73
Int. Cl.[2] C25B *3/00*
U.S. Cl. 204—72 11 Claims



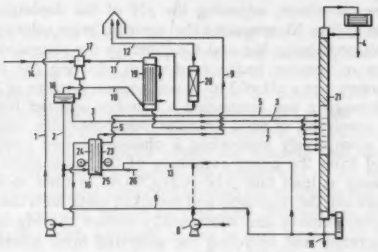
1. An electrolysis process for producing a liquid hydrocarbon capable of being used as a fuel, comprising the steps of partly filling a container with an aqueous electrolyte containing vegetable material selected from the group consisting of seaweed and a member of the cruciferae family, said container having a pair of spaced electrodes therein and carbon disposed between said electrodes, heating the electrolyte and passing a current from one electrode to the other through the electrolyte whereby the desired liquid hydrocarbon is produced, and recovering the liquid hydrocarbon.

4,119,507

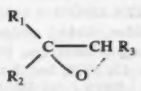
PROCESS OF PRODUCING OLEFIN OXIDE

Karl Hans Simmrock, Dortmund, and Gerhard Hellemanns, Marl, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 18, 1977, Ser. No. 852,753
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658189
Int. Cl.[2] C25B *3/02*
U.S. Cl. 204—80 6 Claims



1. An electrochemical process of producing oxiranes of the formula



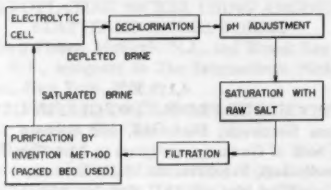
wherein R_1, R_2 and R_3 are substituents selected from the group consisting of hydrogen, methyl or ethyl and wherein the total amount of carbon atoms of R_1, R_2 and R_3 is utmost 2, from olefins by means of an electrochemical system which consists of an anode, a cathode and an intervening partition and which is supplied with an alkali metal chloride-containing, aqueous electrolyte, wherein chlorinecontaining anolyte and olefin are reacted to form olefin chlorohydrin in a reaction chamber disposed outside the electrochemical system, a partial stream of the chlorohydrin-containing solution which leaves the reaction chamber is returned to the anode chamber of the electrochemical system, another partial stream and alkaline catholyte withdrawn from the electrochemical system are reacted to form oxirane and alkali chloride, the oxirane is removed from the solution and the latter is then returned to the anode and cathode chambers of the electrochemical system, characterized in that the electrolysis is carried out in an electrochemical system in which the anolyte and catholyte are separated by a membrane consisting of a cationpermeable polyfluorohydrocarbon which contains electronegative groups.

4,119,508

METHOD OF PURIFYING THE RAW BRINE USED IN ALKALI SALT ELECTROLYSIS

Noriyuki Yokota, Ashiya; Shingo Tokuda, Nishinomiya; Yoshiro Ito, and Kenji Itaya, both of Amagasaki, all of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Division of Ser. No. 639,409, Dec. 10, 1975, Pat. No. 4,060,465, which is a continuation of Ser. No. 482,496, Jun. 24, 1974, abandoned. This application Jun. 9, 1977, Ser. No. 805,160
The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.
Int. Cl.² C25B *1/00, 1/26*
U.S. Cl. 204—128 **8 Claims**



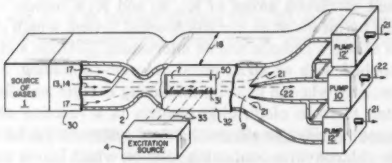
5. A method for the electrolysis of aqueous NaCl or KCl brine solution for the production of chlorine which comprises passing the brine solution through an electrolytic cell, passing an electric current through the cell and brine solution, passing the depleted brine solution to a dechlorination step to remove chlorine therefrom, adjusting the pH of the depleted brine solution to 3 to 10, saturating the depleted brine solution with raw salt containing Mg and Ca, filtering the saturated brine solution to remove undissolved solids, flowing the filtered brine solution at a pH of 3 to 10 and a space velocity of 2 to 20 hr^{-1} through a bed containing a member selected from the group consisting of solid granular water-insoluble adsorbent solids adsorptively supporting a chelate-forming compound selected from the group consisting of the aminoacetic acids containing at least one $>N—CH_2COOH$ in their molecular structure and the oligomers and the alkali metal salts thereof to selectively remove and substantially reduce the Mg and Ca concentration and recycling the saturated brine solution reduced in Mg and Ca to the electrolytic cell.

4,119,509

METHOD AND APPARATUS FOR ISOTOPE SEPARATION FROM A GAS STREAM

Abraham Szoke, Boulder, Colo., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jun. 11, 1976, Ser. No. 695,232
Int. Cl.² B01J *1/10*; B01K *1/00*
U.S. Cl. 204—157.1 R **32 Claims**



1. A method for the separation of isotopes of a material comprising a first isotope and a second isotope comprising the steps of:

a. forming a stream of vapor containing said isotopes, said vapor having a velocity in the direction of said stream;

b. selectively exciting one of said isotopes by exposing said vapor to radiation at a predetermined wavelength without substantially exciting the second isotope;

c. causing the excited first isotope to undergo at least one of the processes of molecular dissociation, chemical reaction and inelastic collision with another particle while this first excited isotope is still excited, whereby this first isotope acquires an excess velocity component transverse to the velocity of the stream; and

d. separating the vapor containing the isotope energized in step (c) from the gas remaining in the stream, after a sufficient time to allow the energized isotope to be substantially segregated from the stream by its excess transverse velocity.

4,119,510

PHOTOCURABLE DIISOCYANATE COMPOSITIONS

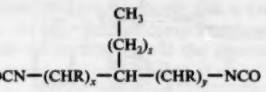
Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 7, 1975, Ser. No. 629,946
Int. Cl.² C08F *2/46, 8/18*
U.S. Cl. 204—159.23 **14 Claims**

1. A photocurable composition consisting essentially of

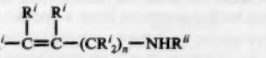
A. A terminally unsaturated component formed by the reaction of

(1) an aliphatic diisocyanate having from 9 to 32 carbon atoms and at least one alkyl side chain characterized by the formula



wherein each R is individually selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms, x and y are, individually, integers having values in the range of 2 to 16, Z is an integer having a value in the range of 0 to 5 and the sum of $(x+y)$ is in the range of 5 to 23; and

(2) an unsaturated compound having a maximum of 12 carbon atoms per molecule characterized by the formula



wherein each R^i is individually selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms, n is an integer having a value in the range of 1 to 6, and R^{ii} is selected from the group consisting of R^i and alkenyl having from 1 to 6 carbon atoms, wherein the reactant ratio of said diisocyanate to said unsaturated compound is about 1:2;

B. a cure-promoting amount of a polymercaptan having the formula

wherein c is at least 2 and R^{iii} is a polyvalent organic moiety free from reactive carbon-to-carbon unsaturation; and

C. a sensitizing amount of a photosensitizer.

4,119,511

APPARATUS AND METHOD OF ASSISTING PILE DRIVING BY ELECTRO-OSMOSIS

Lowell B. Christenson, 7410 Thurow, Houston, Tex. 77087

Filed Jan. 24, 1977, Ser. No. 761,737
Int. Cl.² B01D *13/02*
U.S. Cl. 204—180 R **10 Claims**

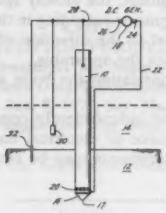
1. An apparatus for assisting the driving of a pile into soil having a body of water above the soil surface comprising,

an electrically conductive base connected to the bottom of the pile,

a d-c power source,

an insulated electrical conductor connected between the negative output of the power source and the conductive base,

a second electrical conductor connected to the positive



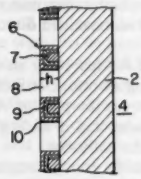
output of the power source and positioned in the water and in electrical communication through the soil with the base for moving the water downwardly along the outside of the pile whereby friction between the pile and soil is reduced making the pile easier to drive through the soil.

4,119,512

AIR-FUEL RATIO DETECTING APPARATUS

Tokuta Inoue, Mishima; Takehisa Yaegashi, and Keiji Aoki, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 3, 1977, Ser. No. 756,286
Claims priority, application Japan, Feb. 9, 1976, 51-12338
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 S **10 Claims**



1. An air-fuel ratio detecting apparatus for detecting the air-fuel ratio of an internal combustion engine by sensing the composition of exhaust gas from the engine, said apparatus comprising:

a first electrode;

a second electrode in the form of a grate having openings defined therein;

a solid electrolyte which contacts ambient atmosphere near said first electrode and contacts exhaust gas near said second electrode;

said second electrode being made of substantially solid non-porous materials and comprising:

an electrically conductive metal material one area of which is in direct electrical and physical contact with the solid electrolyte;

a first layer of another material convering other areas of the electrically conductive metal than said one; and

a second layer of a noble metal catalyst covering said first layer; and

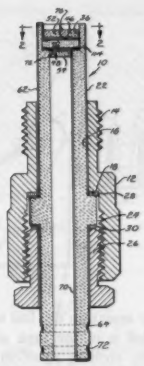
said solid electrolyte is accessible through said openings in said second electrode for direct contact by exhaust gas.

4,119,513

OXYGEN SENSOR FOR INDUSTRIAL AIR/FUEL CONTROL

Ming S. Shum, Des Plaines; Roy E. Svacha, North Barrington; Kenneth R. Janowski, Wheaton, all of Ill., and Anthony V. Fraioli, East Selauket, N.Y., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 7, 1977, Ser. No. 775,078
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 S **8 Claims**



1. An oxygen sensor for measuring the concentration of oxygen in industrial flue gases comprising a housing and means on the housing for attaching the sensor to the wall of a flue gas containing conduit so that the inner or sensing end of the housing is exposed to gases in the conduit and the outer or reference end is exposed to the atmosphere, a nonelectrically conductive tube mounted within the housing and having a sensing end extending beyond the sensing end of the housing and a reference end extending beyond the reference end of the housing, retaining means on said tube intermediate its ends cooperating with retaining means in said housing to fixedly position and seal said tube in gas-tight relation with said housing, an oxygen ion conducting solid electrolyte disc sealed in a recess in the sensing end of said tube, sensing and reference platinum group metal electrode coatings on the sensing and reference surfaces of said electrolyte disc, conductive stripes of said platinum group metal electrode coatings extending continuously along substantially the entire length of said tube for electrically connecting said sensing and reference electrode coatings on said electrolyte disc to spaced contact portions adjacent the reference end of said tube, a felted ceramic fiber filter member positioned in bonded contact with the electrode coatings on each side of said electrolyte disc, and a uniformly dispersed coating of a platinum group metal in contact with said electrode coatings, said uniformly dispersed coating serving to increase the surface area of the electrode coatings.

4,119,514

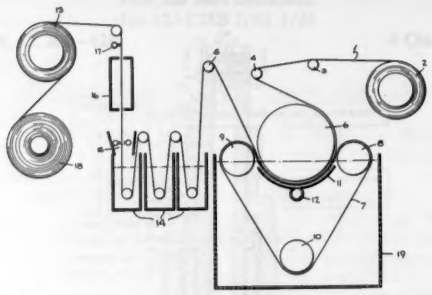
PRODUCTION OF PERFORATED METAL FOIL

John Edward Whittle, Sutton Coldfield, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 789,689, Apr. 21, 1977, Pat. No. 4,082,632, which is a continuation of Ser. No. 715,534, Aug. 8, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 867,014
Int. Cl.[2] C25F *7/00, 3/02, 3/14*
U.S. Cl. 204—206 **4 Claims**

1. Apparatus for perforating metal foil in the presence of an electrolyte comprising a tank suitable for holding an acidic electrolytic etching solution, a movable endless surface characterized by chemical inertness to the electrolyte to be held in the tank, an endless perforated titanium mask, means for continuously feeding a strip of metal foil into, through and from the

tank, means for simultaneously moving portions of the inert surface, the foil and the mask into sandwiched contact with the foil between the inert surface and the mask at a position where the foil is fed through the tank, means for maintaining the mask and foil in face-to-face contact for a preselected period of time when the foil is in the tank, a cathode disposed within the tank and spaced apart from the mask and more remote from the foil than from the mask, an electric current source having communication with the foil and the cathode and having a voltage



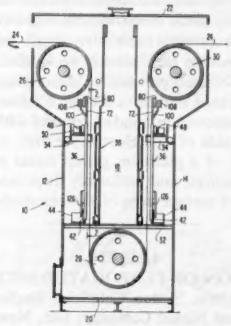
potential sufficient to maintain the foil anodic in relation to the cathode when the foil is in the tank and the tank contains a volume of electrolytic etching solution sufficient to cover the cathode, the portions of the inert surface, foil and mask at the place where these three are to be sandwiched together, means for moving the inert surface and the mask away from the foil before the foil is removed from the tank, and means for continuously returning portions of the endless inert surface and of the endless mask to sandwich with a different portion of the foil when fed into the tank.

4,119,515

APPARATUS FOR ELECTROPLATING SHEET METALS

Andrew L. Costakis, Portage, Ind., assignor to National Steel Corporation

Filed Mar. 28, 1977, Ser. No. 782,016
Int. Cl.² C25D *17/12, 17/02*
U.S. Cl. 204—211 **37 Claims**



1. In an apparatus for electroplating an elongated strip of metal as the strip is drawn longitudinally past a positively charged anode submerged in a bath of electrolite solution, an anode structure comprising,

a generally flat substantially rectangular anode body defined by a plurality of flat plate body segments each having side and end edges,

mounting means for supporting the body segments in a common plane in contiguous relation to one another to define a substantially continuous anode surface extending in a plane substantially parallel to the plane of the metal strip, the mounting means supporting the body segment with at least one end edge extending substantially transversely of the direction of movement of the metal strip and with at least one side edge on each body segment extending in closely spaced relation to a side edge on another body segment, the closely spaced side edges on adjacent body segments extending in the general direction of but not parallel to the direction of movement of the metal strip through the apparatus,

means electrically insulating the body segments from one another, and

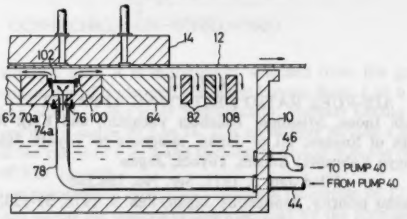
connector means for independently connecting each body segment to a source of electrical energy whereby the respective body segments may be electrically energized selectively.

4,119,516

CONTINUOUS ELECTROPLATING APPARATUS

Seiichi Yamaguchi, Shimizu, Japan, assignor to Koito Manufacturing Company Limited, Tokyo, Japan

Filed Oct. 14, 1977, Ser. No. 842,244
Claims priority, application Japan, Oct. 16, 1976, 51-139190
Int. Cl.² C25D *5/02, 5/08, 7/06*
U.S. Cl. 204—224 R **7 Claims**



1. An apparatus for continuously electroplating a sheet metal strip of electrically conducting material as the strip is fed longitudinally in a predetermined direction through the apparatus, comprising:

(a) a plating vessel for receiving an electrolyte solution;

(b) a cathode having a bottom surface disposed and horizontally supported over the plating vessel, the strip of material being fed under and in sliding contact with said bottom surface of the cathode;

(c) a pair of insoluble anodes mounted within the plating vessel in opposed relationship to the cathode, with a constant spacing between each anode and the strip traveling under the cathode, the pair of anodes being spaced from each other in the predetermined traveling direction of the strip;

(d) a block of electrically insulating material sandwiched between the pair of anodes and having a top surface disposed flush with the top surfaces of the anodes, there being a groove in the top surface of the insulating block which extends in a direction transverse to the predetermined traveling direction of the strip and which has a width greater than the spacing between each anode and the strip traveling under the cathode;

(e) a plate member mounted in the groove in the top surface of the insulating block and having a plurality of openings formed therein; and,

(f) means for forcibly delivering the electrolyte solution into the groove in the insulating block from under the plate member mounted therein in order to cause turbulent flow of the electrolyte solution through the spacings between the anodes and the strip traveling under the cathode, whereby the degree of turbulence of the electrolyte solution flowing through the spacings between the anodes and the strip is made constant in the transverse direction of the

strip as the electrolyte solution forcibly delivered into the groove in the insulating block subsequently flows through the openings in the plate member and over the top surface portions of the insulating block on the opposite sides of the groove.

4,119,517

APPARATUS FOR PURIFYING WATER

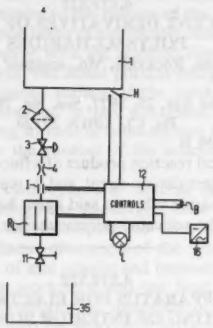
Bernd Hengst, Schweinfurt am Main, Germany, assignor to Sachs-Systemtechnik GmbH, Schweinfurt am Main, Germany

Filed Jun. 8, 1977, Ser. No. 804,562

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626572

Int. Cl.[2] C25B *9/00*; C02B *1/82*

U.S. Cl. 204—229 **13 Claims**



1. Apparatus for purifying water by anodic oxidation comprising:

(a) a casing enclosing a chamber therein and being formed with two orifices spaced from said chamber in opposite directions, said orifices communicating with said chamber;

(b) support means for supporting said casing in an operative position in which said orifices are vertically spaced for gravity flow of the water to be purified from one of said orifices through said chamber to the other orifice;

(c) two electrodes spacedly mounted in said chamber for flow of said water therebetween;

(d) an electric battery in said casing;

(e) circuit means in said casing connecting said battery to said electrodes for passage of electric current between said electrodes through said water when said water and said battery satisfy predetermined conditions,

(1) said circuit means including signal generating means for generating a sensible signal indicative of the voltage across said electrodes being between predetermined maximum and minimum values,

(2) said casing bounding a compartment therein sealed from said chamber, said compartment enclosing at least a portion of said circuit means.

4,119,518

ELECTROLYTIC CELL FOR TREATMENT OF WATER

Jorge Miller, 8341 Noham 156, Germany

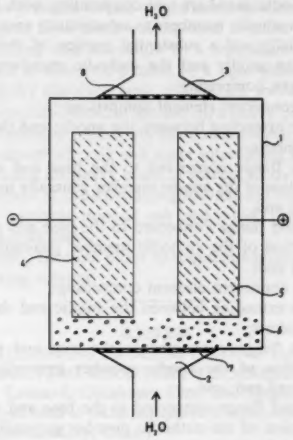
Division of Ser. No. 627,192, Oct. 30, 1975, Pat. No. 4,048,030. This application Jun. 29, 1977, Ser. No. 811,375

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1975, 2531850

Int. Cl.[2] C10G *17/00*

U.S. Cl. 204—263 **22 Claims**

1. An electrolytic cell for the treatment of water, which comprises a closed container with a lower inlet opening and an upper outlet opening for the water, at least two radially positioned electrodes which are adapted to be connected with the positive and with the negative pole of a DC source, particles located in the interior space of the electrolytic cell whose density is higher than that of water and gratings arranged in back of the lower water inlet opening and in front of the upper



water outlet opening, said gratings having openings smaller than the diameter of the particles in the interior of the electrolytic cell, to prevent the particles from emerging from the electrolytic cell.

4,119,519

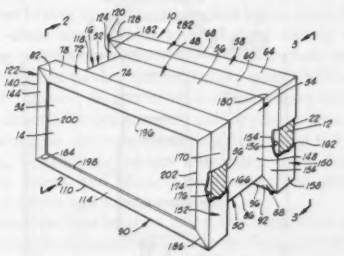
BIPOLAR ELECTRODE FOR USE IN AN ELECTROLYTIC CELL

Thomas W. Clapper, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Apr. 4, 1977, Ser. No. 784,343

Int. Cl.[2] C25B *9/00, 11/02, 11/10*

U.S. Cl. 204—268 **20 Claims**



1. A bipolar electrode for use in an electrolytic cell wherein the bipolar electrode is at least partially immersed in an electrolyte, the bipolar electrode comprising:

an anodic member having a first side, a second side, a first end, a second end, a first face and a second face;

a cathodic member having a first side, a second side, a first end, a second end, a first face and a second face of the cathodic member generally facing the second face of the anodic member and being spaced a distance therefrom; and

a connector constructed of an electrically conductive material, a portion of the connector engaging the portion of the anodic member, a portion of the connector engaging a portion of the cathodic member, and a portion of the connector extending between the second face of the anodic member and the second face of the cathodic member, the connector mechanically connecting the anodic and the

cathodic members in the spaced apart relationship and establishing electrical continuity between the anodic and the cathodic members, the connector extending about a substantial portion of the space between the anodic and the cathodic members and cooperating with the anodic and the cathodic members to substantially encompass and substantially seal a substantial portion of the space between the anodic and the cathodic members from the electrolyte, comprising:

a third connector element comprising:

a base extending between the anodic and the cathodic members;

a first flange connected to the base and engaging a portion of the anodic member generally near the first end; and

a second flange connected to the base and engaging a portion of the cathodic member generally near the first end;

a fourth connector element comprising:

a base extending between the anodic and the cathodic members;

a first flange connected to the base and engaging a portion of the anodic member generally near the second end; and

a second flange connected to the base and engaging a portion of the cathodic member generally near the second end.

4,119,520
WATER SUPPLY SYSTEM

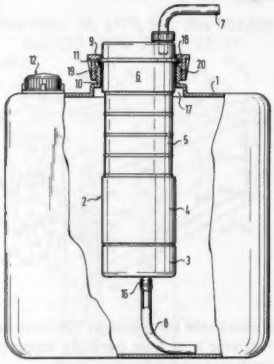
Peter Paschakarnis, Schwebheim; Bernd Hengst, Schweinfurt am Main, and Rainer Wychnanek, Zell, all of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt am Main, Germany

Filed Jun. 8, 1977, Ser. No. 804,560

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626571

Int. Cl.[2] C25B *9/00;* C02B *1/82*

U.S. Cl. 204—276 **9 Claims**



1. A system for supplying water fit to drink comprising:

(a) a container adapted to hold a body of water to be purified;

(b) a housing having an intake for water to be purified;

(c) fastening means releasably fastening a portion of said housing including said intake in said container for communication with said body;

(d) outlet means on said housing and extending outward of said container for discharge of purified water,

(1) said inlet and said outlet means defining a path for the flow of water through said housing from said inlet to said outlet means;

(e) means in said housing defining a cell;

(f) two electrodes spacedly mounted in said cell and electrically insulated from each other;

(g) pump means mounted in said housing for conveying the water to be purified in said path from said intake through said cell to said outlet means;

(h) filter means mounted in said housing and interposed in said path between said intake and said cell for removing particulate matter from said water prior to entry into said cell;

(i) power supply means in said housing for supplying electrolyzing current to said electrodes; and

(j) signal generating means for generating a sensible signal indicative of the operating condition of said pump means and of said power supply means.

4,119,521
FLUORESCENT DERIVATIVES OF ACTIVATED POLYSACCHARIDES

Jack G. Chirikjian, Rockville, Md., assignor to Stephen Turner, Towson, Md.

Filed Apr. 25, 1977, Ser. No. 790,384

Int. Cl.[2] G01N *27/26*

U.S. Cl. 204—299 R **17 Claims**

1. The chemical reaction product of a fluorescent deoxyribonucleic acid intercalating agent and a water-insoluble, activated polysaccharide wherein said agent has formed a chemical bond with the activated polysaccharide.

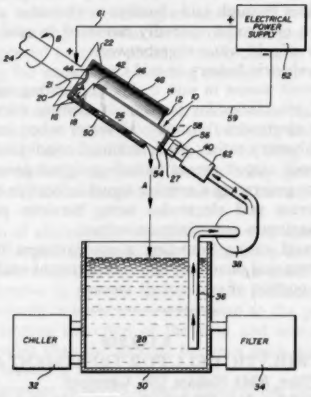
4,119,522
NOZZLE APPARATUS FOR ELECTROPHORETIC COATING OF INTERIOR SURFACES

Loyd R. Brower, Jr., Olympia Fields; Leonard P. Madsen, St. Anne, and Chesley L. Zutaut, Park Forest, all of Ill., assignors to Standard T Chemical Company, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 807,965, Jun. 20, 1977, which is a continuation of Ser. No. 686,110, Jun. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 597,314, Jul. 21, 1975, abandoned. This application Feb. 17, 1978, Ser. No. 878,683

Int. Cl.[2] B01D *13/02;* C25D *13/00*

U.S. Cl. 204—300 EC **9 Claims**



1. In an apparatus for electrophoretically coating the interior surface of an electrically conductive workpiece having a selected linear dimension and a bottom substantially normal to the selected linear dimension, which apparatus includes: a nozzle of electrically conductive material having a selected linear dimension corresponding to that of the workpiece; means for mounting the nozzle in the workpiece in closely spaced proximity to the interior surface thereof and along the selected linear dimension thereof; a reservoir for containing a liquid electrophoretic material; means for supplying electro-

phoretic material under pressure to the nozzle; an electrical circuit connected between the nozzle and the workpiece for establishing an electrophoretic path therebetween; and means for moving the workpiece and the nozzle relative to one another about an axis fixed relative to the workpiece and the nozzle and in a direction lateral to the selected linear dimension of the workpiece, the improvement comprising:

a nozzle having a linear portion along its linear dimension, a head portion connected to the linear portion and disposed substantially normal thereto at one end of the linear portion and including a discharge orifice therein, and inlet tubing connected to the head portion at the discharge orifice thereof for supplying electrophoretic material from the electrophoretic supply means to the discharge orifice, the head portion being of electrically conductive material and shaped whereby when the nozzle is mounted in the workpiece the head portion is disposed in closely spaced proximity to the bottom of the workpiece,

the linear portion being of electrically conductive material and coextensive with the selected linear dimension of the workpiece, the linear portion being closely spaced from the interior surface of the workpiece when the nozzle is mounted in the workpiece, and the linear portion being formed in cross-section to conform substantially to the contour of the interior surface of the workpiece,

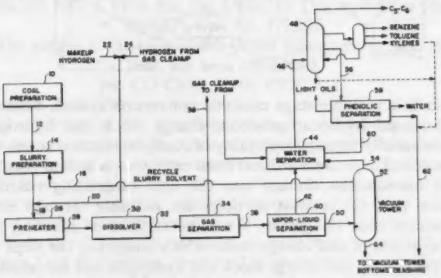
whereby when electrophoretic material is applied to the workpiece through the discharge orifice in said nozzle a linear stream of electrophoretic material is established between the linear dimension of the workpiece and the linear portion of said nozzle, and between a radius of the bottom of the workpiece and the head portion of the nozzle, for electrophoretic migration of the electrophoretic material onto the workpiece surface, and

whereby the linear stream of electrophoretic material is passed over the entire interior surface of the workpiece by the relative motion between the workpiece and said nozzle, thereby to deposit electrophoretically a coating of the electrophoretic material over the entire interior surface.

4,119,523
PROCESSES FOR THE PRODUCTION OF DEASHED COAL

Roger A. Baldwin, Warr Acres, and John L. Bills, Oklahoma City, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Aug. 23, 1976, Ser. No. 716,550
Int. Cl.[2] C10G *1/06*
U.S. Cl. 208—8 **6 Claims**



1. In a process which comprises preparing coal liquefaction products by contacting coal with dissolving solvent at elevated temperature and pressure, passing the resulting mixture to a still to remove coal dissolving solvent for recirculation and leave still bottoms which are passed to a deashing section in which the bottoms are contacted with deashing solvent under suitable conditions of elevated temperature and pressure to form an ash concentrate, the improvements which comprise:

(a) admixing said ash concentrate with a solubilizing solvent comprising at least one solvent selected from the group consisting of pyridine, cresols, pyrrolidine, anthracene oil or admixtures thereof in a solubilizer treatment zone,

(b) maintaining the temperature in said solubilizer treatment zone within a range of from about 190° F. to about 400° F. and the pressure in said solubilizer treatment zone within a range of from about atmospheric to about 300 psig,

(c) subjecting said admixture to a separation treatment to separate at least two phases, (i) a light phase comprising principally dissolved coal; solubilizing solvent; and some solid, insoluble mineral ash and (ii) a heavy phase comprising substantially solid, insoluble mineral ash; solid insoluble undissolved coal; and some solubilizing solvent,

(d) subjecting the heavy phase to solvent recovery treatment for recycle of the solubilizing solvent and recovery of the solid, insoluble mineral ash and solid, insoluble undissolved coal, and

(e) recycling the light phase to supplant a portion of the coal dissolving solvent.

4,119,524
COAL DEASHING PROCESS HAVING IMPROVED SOLVENT RECOVERY TECHNIQUES

Robert E. Leonard, Oklahoma City, and Roger A. Baldwin, Warr Acres, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jun. 1, 1976, Ser. No. 691,575
Int. Cl.[2] C10G *1/06*
U.S. Cl. 208—8 **8 Claims**

1. A process comprising:

mixing in a first mixing zone a first dissolving solvent with coal, solubilizing the coal at elevated temperature and pressure, and flashing the resultant mixture to produce a prepared mixture comprising the first dissolving solvent, the soluble coal products and the insoluble coal products;

mixing the prepared mixture with a second dissolving solvent in a second mixing zone to provide a feed mixture, said second dissolving solvent consisting essentially of at least one substance having a critical temperature below 800° F. selected from the group consisting of aromatic hydrocarbons having a single benzene nucleus and normal boiling points below about 310° F., cycloparaffin hydrocarbons having normal boiling points below about 310° F., open chain mono-olefin hydrocarbons having normal boiling points below about 310° F., open chain saturated hydrocarbons having normal boiling points below about 310° F., mono-, di, and tri-open chain amines containing from about 2–8 carbon atoms, carbocyclic amines having a monocyclic structure containing from about 6–9 carbon atoms, heterocyclic amines containing from about 5–9 carbon atoms, and phenols containing from about 6–9 carbon atoms and their homologs;

introducing the feed mixture into a first separation zone;

maintaining the temperature level in the first separation zone in the range of from about 460° F. to about 620° F., and maintaining the pressure level in the first separation zone in the range of from about 650 psig to about 1000 psig;

separating the feed mixture in the first separation zone into a first heavy fraction comprising the insoluble coal products, some of the first dissolving solvent and some of the second dissolving solvent, and into a first light fraction;

withdrawing the first light fraction from the first separation zone;

introducing the first light fraction into a second separation zone;

maintaining the temperature level in the second separation zone in the range of from about 630° F. to about 900° F. and the pressure level in the second separation zone in the range of from about 650 psig to about 1000 psig;

separating the first light fraction in the second separation zone into a second light fraction comprising the second dissolving solvent, and a second heavy fraction;

withdrawing the second light fraction comprising the second dissolving solvent from the second separation zone;

passing the second light fraction comprising the second dissolving solvent into the second mixing zone for mixing with the prepared mixture to aid in providing feed mixture;

withdrawing the first heavy fraction from the first separation zone;

flashing the first heavy fraction to produce one stream comprising the insoluble coal products and one other stream comprising the first and the second dissolving solvents;

separating the first dissolving solvent from the second dissolving solvent contained in the stream which was produced by flashing the first heavy fraction;

passing the thus separated first dissolving solvent into the first mixing zone for mixing with the coal; and

passing the thus separated second dissolving solvent into the second mixing zone for mixing with the prepared mixture to aid in providing the feed mixture.

4,119,525

MANUFACTURE OF COKE

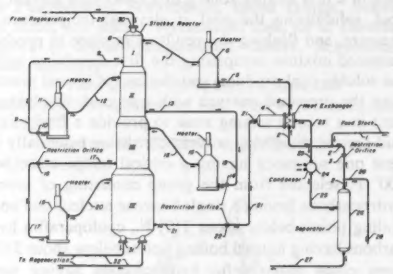
Michael David Gray, and Geoffrey Michael Kimber, both of Cheltenham, England, assignors to Coal Industry (Patents) Limited, London, England

Filed May 21, 1976, Ser. No. 688,777

Claims priority, application United Kingdom, Jun. 9, 1975, 24675/75

Int. Cl.[2] C10G *1/04*

U.S. Cl. 208—8 **4 Claims**



1. A process for the production of low impurity coke for the production of electrodes, which process comprises extracting a coal of volatile matter content greater than about 28% by weight on a dry ash free basis with an anthracene oil, recycled or refractorised anthracene oil of which the middle 90% boils in the range 250° to 350° C., at a temperature of about 380° to 450° C., in the liquid phase, to form an extract and insoluble matter, separating the liquid matter from the insoluble matter, heating the separated extract to distill off a distillable oil at least a portion of which is recycled as extractant and coking the residue to form said low-impurity coke wherein the residence time of coal in the extraction step is controlled and the weight ratio of extractant to coal during extraction is maintained greater than 3:1 to maintain a substantially constant specific resistivity of the filter cake.

4,119,526

MULTIPLE-STAGE HYDROCARBON CONVERSION WITH GRAVITY-FLOWING CATALYST PARTICLES

Kenneth D. Peters, Elmhurst; Elliot Veinerman, Des Plaines, and Donald E. Felch, Arlington Heights, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed May 9, 1977, Ser. No. 795,250

Int. Cl.[2] C10G *35/12*

U.S. Cl. 208—64 **14 Claims**

1. In a multiple-stage catalytic conversion system, wherein (1) heated hydrocarbonaceous charge stock and hydrogen flow serially through a plurality of catalytic reaction zones; (2) the reaction product effluent from each zone is heated prior to the introduction thereof into the next succeeding reaction zone; and, (3) catalyst particles are movable through each reaction zone via gravity-flow, the method of effecting the conversion of said charge stock which comprises the steps of:

(a) heating said charge stock and hydrogen, and introducing the heated mixture into a first reaction zone maintained at hydrocarbon conversion conditions;

(b) heating the resulting first reaction zone effluent and introducing the heated effluent into a succeeding reaction zone maintaned at hydrocarbon conversion conditions;

(c) restricting the flow of the effluent from at least one reaction zone by means of a fixed restriction orifice in said plurality and separating the effluent from the last reaction zone to provide (i) a normally liquid product stream and, (ii) a hydrogen-rich vaporous phase;

(d) restricting the flow by means of a fixed restriction orifice of at least a portion of said hydrogen-rich vaporous phase and recycling said portion to said first reaction zone, each of said flow restrictions in steps (c) and (d) producing an additional pressure drop increase, for the overall reactor system, of from about 1.0 to about 10.0 psi;

(e) at least periodically withdrawing catalyst particles from the last of said reaction zones; and,

(f) at least periodically introducing fresh, or regenerated catalyst particles into the first of said reaction zones.

4,119,527

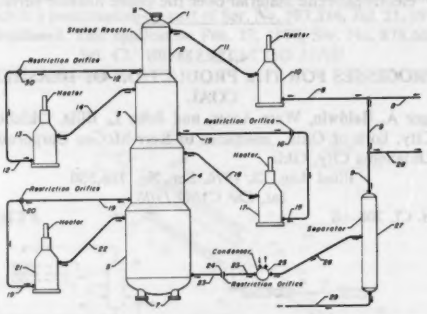
MULTIPLE-STAGE HYDROCARBON CONVERSION WITH GRAVITY-FLOWING CATALYST PARTICLES

Kenneth D. Peters, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 9, 1977, Ser. No. 795,054

Int. Cl.[2] C10G *35/12*

U.S. Cl. 208—64 **12 Claims**



1. In a multiple-stage catalytic conversion system, wherein (1) heated hydrocarbonaceous charge stock and hydrogen flow serially through a plurality of catalytic reaction zones; (2) the reaction product effluent from each zone is heated prior to the introduction thereof into the next succeeding reaction zone; and, (3) catalyst particles are movable through each reaction zone via gravity flow, the method of effecting the conversion of said charge stock which comprises the steps of:

(a) heating said charge stock and hydrogen, and introducing the heated mixture into a first reaction zone maintained at hydrocarbon conversion conditions;

(b) heating the resulting first reaction zone effluent and introducing the heated effluent into a succeeding reaction zone maintained at hydrocarbon conversion conditions;

(c) restricting the flow of the effluent from at least one reaction zone in said plurality by means of a fixed restriction orifice and separating the effluent from the last reaction zone to provide (i) a normally liquid product stream and, (ii) a hydrogen-rich vaporous phase, each such fixed flow restriction orifice producing an additional pressure

drop increase, for the over-all reactor system, of from about 1.0 to about 10.0 psi;

(d) at least periodically withdrawing catalyst particles from the last of said reaction zones; and

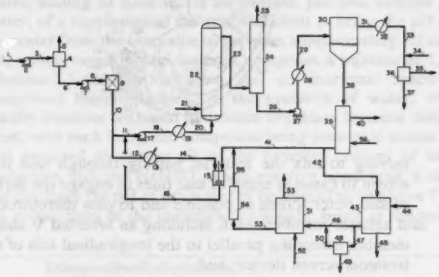
(e) at least periodically introducing fresh, or regenerated catalyst particles into the first of said reaction zones.

4,119,528

HYDROCONVERSION OF RESIDUA WITH POTASSIUM SULFIDE

William C. Baird, Jr., and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Linden, N.J.

Filed Aug. 1, 1977, Ser. No. 820,820
Int. Cl.[2] C10G *13/06;* B01J *23/04, 23/90*
U.S. Cl. 208—108 **13 Claims**



1. A process for the combined desulfurization and hydroconversion of a heavy hydrocarbon feedstock, which comprises contacting said heavy hydrocarbon feedstock without pretreatment with potassium sulfide in a conversion zone in the presence of a sufficient amount of added hydrogen to produce a hydrogen pressure of from about 500 to 5000 psi, in a conversion zone maintained at an elevated temperature between 500° and 2000° F., so that said heavy hydrocarbon feedstock is converted to lower boiling hydrocarbon products and is substantially desulfurized.

4,119,529

DEHYDROCYCLIZATION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 687,135, May 17, 1976, Pat. No. 4,018,669, which is a continuation-in-part of Ser. No. 522,209, Nov. 8, 1974, Pat. No. 3,960,710. This application Mar. 18, 1977, Ser. No. 779,207
The portion of the term of this patent subsequent to Apr. 19, 1994, has been disclaimed.
Int. Cl.[2] C10G *35/08;* C07C *5/22*
U.S. Cl. 208—139 **26 Claims**

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon, at dehydrocyclization conditions effective to convert said hydrocarbon to an aromatic hydrocarbon as the principal reaction of the process, with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.05 to about 5 wt. % cobalt and about 0.1 to about 3.5 wt. % halogen; wherein the platinum or palladium, rhodium and catalytically available cobalt are uniformly dispersed throughout the porous carrier material; and wherein substantially all of the platinum or palladium and rhodium are present in the elemental metallic state; and wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrocyclization conditions as in a mixture of these states.

4,119,530

MOVING-BED REACTOR STARTUP PROCESS

George J. Czajkowski, Chicago, and Frank Stolfa, Park Ridge, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 610,479, Sep. 4, 1975, abandoned. This application Jan. 21, 1977, Ser. No. 761,504
Int. Cl.[2] C10G *23/08*
U.S. Cl. 208—213 **3 Claims**

1. A startup method for a moving-bed reactor containing a bed of solid catalyst in a substantially cylindrical catalyst retention volume which comprises the steps of:

(a) starting on-stream operation of the reactor with the catalyst retention volume of the reactor being less than 99 vol. % full;

(b) intermittently charging a quantity of catalyst greater than 0.1 vol. % and less than 5.0 vol. % per intermittent charge of catalyst to the reactor and effecting the addition of catalyst at a first rate of catalyst transfer;

(c) intermittently removing a quantity of used catalyst from the bottom of the reactor at a second rate of catalyst transfer less than the first rate of catalyst transfer; and,

(d) equalizing the first and the second rates of catalyst transfer when the catalyst retention volume of the reactor becomes filled.

4,119,531

LARGE-PORE HYDRODEMETALLIZATION CATALYST AND PROCESS EMPLOYING SAME

P. Donald Hopkins, St. Charles, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 30, 1977, Ser. No. 811,835
Int. Cl.[2] C10G *17/00*
U.S. Cl. 208—251 H **6 Claims**

1. A catalyst for the catalytic hydrodemetallization of hydrocarbon streams, which catalyst consists essentially of a small amount of a single active original hydrogenation metal deposed on a large-pore, high-surface area alumina, said hydrogenation metal being a member of Group VIB of the Periodic Table of Elements and being present in the elemental form, as an oxide, as a sulfide, or mixtures thereof, said member of Group VIB of the Periodic Table of Elements being present in an amount within the range of about 0.5 wt.% to about 3 wt.%, based upon the total catalyst weight and calculated as the oxide, and said catalyst having a surface area of 120 m^2/gm to about 400 m^2/gm, a pore volume of 0.7 cc/gm to about 1.5 cc/gm, and an average pore diameter of 125 A to about 350 A.

4,119,532

BENEFICIATION METHOD

Moon C. Park, 15 Talisay Rd., Forbes Park, Makati, Philippines

Filed Sep. 10, 1976, Ser. No. 721,988
Int. Cl.[2] B03B *5/58*
U.S. Cl. 209—17 **3 Claims**

1. A beneficiation method for separating severed ore into concentrate and gangue comprising:

placing a screen across a vessel having an inlet at the bottom and an outlet at the top, the screen being positioned between the bottom and the outlet;

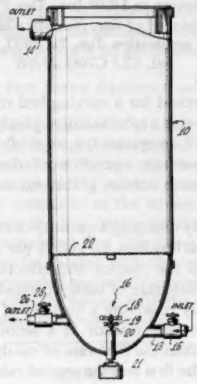
placing severed ore on top of the screen;

supplying water to the inlet;

rotating a propeller in the vessel at high speed to break up the ore;

further rotating the propeller to cause the water supplied through the inlet to flow upwardly from the inlet through the screen to the outlet so that the presence of the screen minimizes the rotational flow of the water and equalizes

the water pressure in the area of the vessel above the screen, the gangue being carried upwardly and through



the outlet by the water, while the concentrate remains in the vessel due to its higher specific gravity; and removing the concentrate from the vessel.

4,119,533

METHOD FOR SEPARATING MIXED PLASTICS

Kozo Saitoh, Tokyo, and Sumio Izumi, Sayama, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1975, Ser. No. 603,201
Claims priority, application Japan, Aug. 9, 1974, 49-91319
Int. Cl.[2] B03B *3/02, 5/62*
U.S. Cl. 209—155 **7 Claims**

1. A method of separating highly hydrophobic plastics selected from the group consisting of thermoplastics plastics, thermosetting plastics and mixtures thereof in a plastics mixture consisting of placing the plastics mixture in an aqueous liquid medium in a vessel, agitating the aqueous liquid medium by keeping the liquid medium in a rotary, rising, descending or swirling flowing state or a combination of said flowing states by stirring the medium with rotating blades or by introducing the medium under pressure into the vessel to disperse the plastics mixture whereby the plastics having a higher hydrophobicity float on the aqueous liquid medium surface, and removing the plastics floating on the surface of the aqueous liquid medium, said agitation being conducted without significant introduction of gases into said medium.

4,119,534

MULTIPLE DECK TROMMEL SCREEN

Stuart M. Porter; Francis Edward Litty, both of Denver; Ervin C. Weimer, Wheat Ridge, and Eric G. Pollack, Denver, all of Colo., assignors to Stearns-Roger Corp., Glendale, Colo.

Filed Mar. 18, 1977, Ser. No. 778,876
Int. Cl.[2] B07B *1/24*
U.S. Cl. 209—291 **4 Claims**

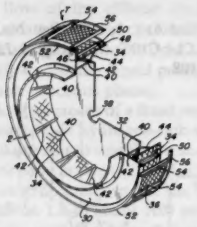
1. A multiple deck trommel screen device for connection to the discharge end of a cylindrical imperforate drum of a generally horizontal rotatable dryer for separating fines from particulate material, wherein the fines are collected in a first hopper and the rest of the particulate material is caught in a second hopper, said trommel screen device comprising:

a generally cylindrical frame for supporting at least inner and outer concentrically mounted supporting screens connectible to the discharge end of the drum;

said inner cylindrical screen mounted on said frame and having a diameter greater than the drum and having a relatively coarse mesh;

said outer cylindrical screen mounted on said frame concentric with said inner screen and having a diameter greater than said inner screen and being of fine mesh through which only the fines can pass, said frame being connectible to the discharge end of the drum so that all fines passing through both screens are collected in the first hopper and all particulate material passing over the end of said screens is collected in the second hopper;

said outer screen being made up of individual screen segments secured to said frame by agitator members on the inner side of said frame, said agitator members clamping the edges of said inner screen sections to said frame and



serving to mix the material passing through said inner screen to cause as many of said fines to engage the surface of said outer screen as possible and to pass therethrough;

said agitator members each including an inverted V-shaped member extending parallel to the longitudinal axis of said trommel screen device; and

bolts having one end connected to said V-shaped member and extending through cross members on said frame, the edges of said screen sections being positioned between the ends of said V-shaped member and said cross members and held in place when said bolts are tightened.

4,119,535

METHOD OF SANITIZING A VOLUME OF WATER IN CONJUNCTION WITH CHLORINE

Eugene B. White, 126 S. East Ave., Oak Park, Ill. 60302, and Mahindar N. Sharma, 245 W. Main St., Lake Zurich, Ill. 60047

Division of Ser. No. 351,595, Apr. 16, 1973, abandoned. This application Sep. 15, 1975, Ser. No. 613,517
Int. Cl.[2] C02B *3/06*
U.S. Cl. 210—62 **4 Claims**

3. A supplemental treatment for swimming pool water and the like, which is primarily sanitized by maintenance of an available chlorine content in such water, introduced therein from known chlorine-containing materials by means of known procedures, comprising, following a previous chlorination of such water, the steps of ascertaining by test, the pH of such water, adding to such water an amount, per unit volume of water, of a supplemental material sufficient to bring the pH of the water from the test value to between approximately 7.2 and 7.4, which supplemental material comprises a mixture of 1,3-dibromo-5,5-dimethylhydantoin and an inorganic reactive compound therefor which, in the presence of water, will readily combine with said hydantoin to release bromine therefrom, with such inorganic compound being present in excess of that required to release all of the bromine content of said hydantoin, utilizing $NaCO_3$ as said reactive compound, if said test discloses the pH of the water to be treated to be below 7.2, the proportions of the materials, by weight, being as follows:

Dibromodimethylhydantoin	1.00
$NaCO_3$	29.00

introducing in the water to be treated a sufficient amount of such supplemental material, per unit volume of water, that the excess therein of said reactive compound will bring the pH of the water treated therewith up approximately 7.2 to 7.4, said

amounts of hydantoin and reactive compound being so proportioned with respect to the amount of excess reactive compound that upon said addition of such material to the water to be treated, to effect the specified pH change, the amount of hydantoin will be sufficient to provide a desired amount of available bromine per unit volume of water, not greater than a predetermined maximum value suitable for sanitizing purposes in accordance with established sanitizing techniques, and thereafter, if necessary, adding available chlorine to such water in quantities sufficient to provide a predetermined residual amount of available halogen in such water.

4. A supplemental treatment for swimming pool water and the like, which is primarily sanitized by maintenance of an available chlorine content in such water, introduced therein from known chlorine-containing materials by means of known procedures, comprising, following a previous chlorination of such water, the steps of ascertaining by test, the pH of such water, adding to such water an amount, per unit volume of water, of a supplemental material sufficient to bring the pH of the water from the test value to between approximately 7.2 and 7.4, which supplemental material comprises a mixture of 1,3-dibromo-5,5-dimethylhydantoin and an inorganic reactive compound therefor which, in the presence of water, will readily combine with said hydantoin to release bromine therefrom, with such inorganic compound being present in excess of that required to release all of the bromine content of said hydantoin, utilizing $NaHSO_4$ as said reactive compound, if said test discloses the pH of the water of be treated to be above 7.4, the proportions of the materials, by weight, being as follows:

Dibromodimethylhydantoin	1.00
$NaHSO_4$	29.00

introducing in the water to be treated a sufficient amount of such supplemental material, per unit volume of water, that the excess therein of said reactive compound will bring the pH of the water treated therewith down to approximately 7.4 to 7.2, said amounts of hydantoin and reactive compound being so proportioned with espect to the amount of excess reactive compound that upon said addition of such material to the water to be treated, to effect the specified pH change, the amount of hydantoin will be sufficient to provide a desired amount of available bromine per unit volume of water, not greater than a predetermined maximum value suitable for sanitizing purposes in accordance with established sanitizing techniques, and thereafter, if necessary, adding available chlorine to such water in quantities sufficient to provide a predetermined residual amount of available halogen in such water.

4,119,536
METHOD OF DISPOSING OF A FERROUS-ION CONTAINING ACIDIC AQUEOUS WASTE BY FORMING POLYCRYSTALLINE IRON COMPOUND PARTICLES

Keizo Iwase, Shiga; Toshio Takada, and Masao Kiyama, both of Kyoto, all of Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1974, Ser. No. 503,598
Int. Cl.[2] C02C 5/04
U.S. Cl. 210—50 **4 Claims**

1. In a method of disposing of an acidic aqueous waste liquid containing ferrous ions, wherein said acidic liquid is raised in pH value by adjustment with a base and subjected to oxidation by passing air therethrough to produce a precipitate of an iron compound, the improvement comprising the steps of:

carrying out said oxidation at a temperature ranging from about 50° C to 75° C while adjusting and maintaining the pH of said aqueous waste liquid at the range of about 3.5 to 5.2 by flowing air containing ammonia gas through said liquid,

whereby to produce an iron compound precipitate in the form of easily filterable polycrystalline particles comprising agglomerates of fine particles, and then separating said precipitate from said aqueous waste liquid, thereby producing a substantially neutral and transparent liquid.

4,119,537
METHOD FOR SLIME CONTROL

Hershel Finkelstein, 413 Beach 121 St., Rockaway Park, N.Y. 11694

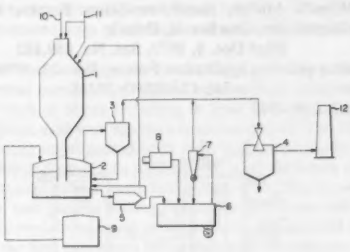
Filed Apr. 29, 1977, Ser. No. 792,464
Int. Cl.[2] C02B 3/06
U.S. Cl. 210—64 **11 Claims**

1. A method for slime control in water systems wherein is added to said water system a chemical formulation comprising chemical lime, pitch dispersing agent, sodium hydrosulfite, antifoaming agent, and a water soluble organic surfactant, wherein the formulation is added to said water system in an amount from 1. to 5,000. parts per million by weight of said chemical formulation, wherein the formulation contains 20 to 80 percent chemical lime, 0.1 to 15. percent water soluble organic surfactant, 5. to 35. percent pitch dispersing agent, 5. to 40. percent sodium hydrosulfite, 1. to 15. percent antifoaming agent.

4,119,538
TREATMENT OF WASTE LIQUID AND APPARATUS THEREFOR AND A FERTILIZER COMPOSITION OBTAINED THEREBY

Tadashi Yamauchi, Kawasaki; Mikio Akune, Yokosuka, and Susumo Kouchi, Tokyo, all of Japan, assignors to Nittetu Chemical Engineering Ltd., Tokyo, Japan

Filed Dec. 14, 1976, Ser. No. 750,375
Claims priority, application Japan, Dec. 15, 1975, 50/148514
Int. Cl.[2] C02C 5/06
U.S. Cl. 210—67 **19 Claims**



1. A process for treating a fermentation waste liquid which contains organic and inorganic material comprising

(a) combusting a concentrate of said liquid in a combustion zone, whereby combustion products comprising ashes and combustion gas are formed;

(b) bringing said combustion products into direct contact with a fresh portion of said liquid in a contacting zone to concentrate said fresh portion of said liquid and to form a slurry comprising said ashes dispersed in the concentrated liquid in the contacting zone;

(c) recovering at least a portion of said slurry from the contacting zone;

(d) separating said recovered slurry into a concentrated liquid phase and a sedimentation phase;

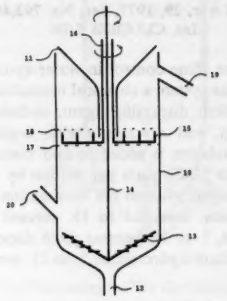
(e) recovering a solid product from the sedimentation phase; and

(f) introducing at least a portion of said concentrated liquid phase into the combustion zone as said concentrate.

4,119,539
THREE PHASE SEPARATION

Victor Alexander Ettel, and Juraj Babjak, both of Mississauga, Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Jun. 15, 1977, Ser. No. 806,753
Claims priority, application Canada, Nov. 15, 1976, 265643
Int. Cl.[2] B01D *21/14*
U.S. Cl. 210—73 R 7 Claims

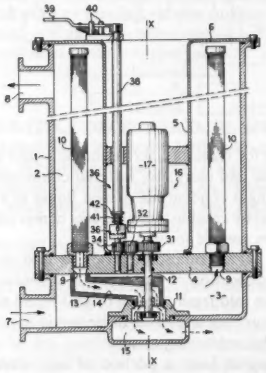


1. A process for separating a three-phase mixture of an aqueous liquid, an organic liquid less dense than the aqueous liquid and a solid denser than the aqueous liquid comprising introducing the mixture into a settler wherein the solid and the aqueous liquid settle below the organic liquid to define an organic/aqueous interface, withdrawing the organic liquid from above the interface, withdrawing the aqueous liquid and the solid from below the interface, and imparting a local agitation to the liquids at the interface level during the separation process.

4,119,540
COUNTER-CURRENT AUTOMATIC CLEANING FILTER

Jean-Claude Muller, Neuilly-sur-Seine, France, assignor to Rellumit-Inter, Courbevoie, France

Filed Dec. 9, 1977, Ser. No. 859,182
Claims priority, application France, Dec. 22, 1976, 76 38662
Int. Cl.[2] B01D *29/38*
U.S. Cl. 210—142 4 Claims

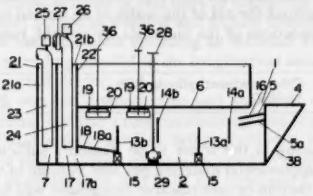


1. An automatic counter-current cleaning filter comprising a housing having an axis, means defining a filtering chamber in said housing, a number of hollow filtering elements having inlets and outlets and arranged on a circle centered on said axis in the filtering chamber, the filtering chamber having a liquid inlet and a liquid outlet with which liquid inlet and liquid outlet the interiors of the filtering elements communicate in parallel, an impurity discharging chamber in which prevails a pressure lower than the pressure of the filtered liquid, and a hollow arm defining a passageway and mounted to rotate about said axis and capable of successively connecting as it rotates about said axis all the inlets of said elements to the impurity discharging chamber by way of said passageway, a first unidirectional step-by-step drive mechanism having a driven member, a second unidirectional step-by-step drive mechanism having a driven member, and means connecting the arm to be driven by the driven member of the first drive mechanism and means connecting the arm to be driven by the driven member of the second drive mechanism in the same direction as it is driven by the drive member of the first step-by-step drive mechanism.

4,119,541
ARRANGEMENT FOR DISPOSING OF FLUID FLOATING MATTER

Shigetoshi Makaya, Osaka, Japan, assignor to M.O. (Mitsui-Osaka Maritime Construction Company Limited), Osaka, Japan

Filed May 3, 1976, Ser. No. 682,610
Int. Cl.[2] E02B *15/04*
U.S. Cl. 210—242 R 2 Claims



1. An arrangement for disposing of floating matter in a body of water comprising:

(a) a vessel which can float;

(b) a recovery-separation tank (2) in said vessel with a surface lower than that of the outside water;

(c) inlet means (1) at the front of the recoveryseparation recovery-separation for drawing in floating matter such as oil floating on the surface of the water outside, said inlet (1) leading to the recovery-separation tank (2);

(d) anti-emulsion plate means (5, 5a) extending from below the inlet means (1) downwardly into the recovery-separation tank, said anti-emulsion plate having many tiny holes so as to run through the water in the direction of thickness thereof and flow floating matter along the surface thereof.

(e) a water chamger (17) at the rear of the recovery-separation tank (2) for storing the water running the lower portion of the recovery-separation tank (2) through a water entrance opened at the lower part of the water chamber;

(f) floating matter reservoir (7) adjacent to the recovery-separation tank (2) for storing the floating matter overflowing therefrom;

(g) drain pump means which discharges the water out of the water chamber;

(h) suction pump means which removes the floating matter out of the floating matter reservoir;

(i) vertical plate travel path defining means for separating the floating matter and the water into layers, said vertical plate defining a quiescent region under the layer of floating matter, a lower elongated travel path and an upper shorter path so as to elongate the flow path of the water running in the lower portion of the recovery-separation tank to said drain pump and shortening the flow path of the floating matter to said floating matter reservoir maintaining a quiescent region therebetween, said travel path defining means including a plurality of vertical baffle

plates connected to the bottom of said recovery-separation tank but spaced above the bottom of said tank and so interrelated between said inlet means (1) at the one end of said tank and said storage water chamber (17) and the floating matter reservoir (7) for separated fractions at the other end of said tank as to cause a vertical zig-zag flow through said tank.

4,119,542

CENTRIFUGAL SEPARATOR

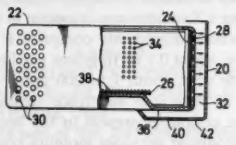
Mikio Yamaoka; Yukio Hayashida; Takashi Korekawa, and Toshiharu Nibu, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Continuation of Ser. No. 623,048, Oct. 16, 1975, abandoned. This application Dec. 7, 1977, Ser. No. 858,441

Claims priority, application Japan, Oct. 18, 1974, 49-120870; Apr. 11, 1975, 50-44601; Apr. 11, 1975, 50-49698

Int. Cl.[2] B01D *33/06*

U.S. Cl. 210—360 A **36 Claims**



1. A centrifugal separator comprising, a driven hollow rotor having a cylindrical wall portion having a center axis and a smooth inner peripheral surface closed over at least the majority of its total area, means mounting the rotor for rotation about said center axis, and a porous, continuous-wall tubular elastic film initially elongated and having free longitudinal end portions and cylindrically positioned within said cylindrical wall portion of the rotor with said free longitudinal end portions overlapping each other, said film being free from and unfastened to said rotor and being constructed of a material of sufficient resiliency to enable said film to be urged to uniformly radially expand against the inner peripheral surface of said cylindrical wall portion by the elasticity thereof so that the film has a uniformly increased porosity and has its outer peripheral surface in contact substantially throughout the total area of the surface with the inner peripheral surface of said wall portion when the film is free from a force urging the film radially away from the inner peripheral surface of said wall portion, means and to uniformly radially contract to a uniformly decreased porosity and away from the inner peripheral surface of said cylindrical wall portion when the rotor is being driven to rotate about said center axis in the presence of liquid between said film and the inner peripheral of said cylindrical wall portion.

19. A juice extractor comprising, a driven centrifugal basket having a cylindrical wall portion having a center axis and a smooth inner peripheral surface closed over at least the majority of its total area, means mounting the centrifugal basket rotatable about said center axis, and a porous, continuous-wall tubular elastic film initially elongated and having free longitudinal end portions and cylindrically positioned within said cylindrical wall portion of the centrifugal basket with said free longitudinal end portions overlapping each other, said film being free from and unfastened to said basket and being constructed of a material of sufficient resiliency to enable said film to be urged to uniformly radially expand against the inner peripheral surface of said cylindrical wall portion by the elasticity thereof so that the film has a uniformly increased porosity and has its outer peripheral surface in contact substantially throughout the total area of the surface with the inner peripheral surface of said wall portion when the film is free from a force urging the film radially away from the inner peripheral surface of said wall portion, and to uniformly radially contract to a uniformly decreased porosity and away from the inner peripheral surface of said cylindrical wall portion when the centrifugal basket is driven to rotate about said center axis in the presence of liquid between said film and the inner peripheral surface of said cylindrical wall portion of the basket.

4,119,543

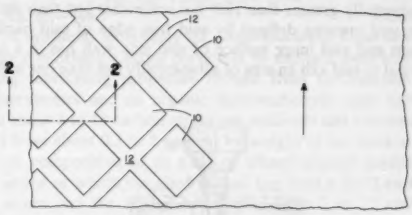
FILTER MEDIUM AND METHOD OF MAKING SAME

Grover C. Lawson, and James C. Wilson, both of Greenwich, N.Y., assignors to Hollingsworth & Vose Company, East Walpole, Mass.

Continuation-in-part of Ser. No. 691,420, Jun. 1, 1976, abandoned. This application Jul. 8, 1977, Ser. No. 813,953

Int. Cl.[2] B01D *27/02, 27/04, 39/14*

U.S. Cl. 210—496 **14 Claims**



1. A filter medium particularly adapted for use in an oil filter for an internal combustion engine, said medium comprising a water-laid web of fibers including at least 70% by weight of cellulose fibers, said web having a ream weight of 35 to 180 lb., said web being impregnated with resin in a pattern at its wire side to a depth from 15 to 45% of the total thickness of the web, the amount of said resin being from 9 to 15 % by weight of the web, said pattern having first zones free from said resin and other zones impregnated with said resin, at least one surface dimension of each of the first said zones being from 0.1 to 4 mm., the total area of the first said zones being from 35 to 60% of the total surface area of said wire side, and the air porosity of said impregnated web being from 1 to 200 CFM per sq.ft. at a pressure drop of 0.5 inch water on a Frazier Porosity Tester.

9. A filter medium particularly adapted for use in an oil filter for an internal combustion engine, said medium comprising a water-laid web of fibers including at least 70% by weight of cellulose fibers, said web having a ream weight of 35 to 180 lb., said web being impregnated with resin in a pattern at its wire side to a depth from 15 to 45% of the total thickness of the web, the amount of said resin being from 9 to 15% by weight of the web, said pattern having first zones free from said resin and other zones impregnated with said resin, the size and shape of each of the first said zones being such that the distance from any point on the surface of each zone to the nearest edge of the zone is from 0.05 to 2 mm., the total area of the first said zones being from 35 to 60% of the total surface area of the wire side, and the air porosity of said impregnated web being from 1 to 200 CFM per sq.ft. at a pressure drop of 0.5 in. water on a Frazier Porosity Tester.

4,119,544

SETTLING CONTAINER

Ernst Vesely, Sussex, N.J., assignor to The Purdue Frederick Company, South Norwalk, N.Y.

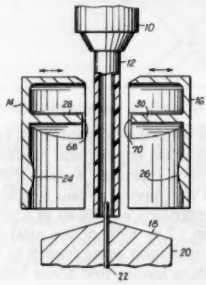
Filed Apr. 26, 1977, Ser. No. 791,152

Int. Cl.[2] B01D *21/00*

U.S. Cl. 210—515 **9 Claims**

1. A device for receiving and clarifying a liquid having particles suspended therein, comprising a receptacle consisting of a one-piece plastic container having an open top, a closed bottom, and an endless side wall extending between said open top and bottom, said side wall defining with said closed bottom

of said container a hollow interior thereof adapted to receive a liquid having particles suspended therein, and said container having a central axis surrounded by said side wall, said side wall being parallel to said axis with said container having a constant cross section in any plane normal to said axis situated between said open top and closed bottom of said container, and partition means integral with said side wall and extending across the hollow interior of said container while being spaced at a substantial distance from said open top and closed bottom thereof to define in the hollow interior of said container upper and lower chambers separated from each other by said partition means, said partition means having in the hollow interior of said container a free edge spaced from an inner side surface of said side wall and defining therewith an opening through which said chambers communicate with each other, and said partition means having a peripheral portion integral with side wall and extending around said central axis through an angle substantially greater than 180° but somewhat less than 360° so that said opening defined by said free edge of said partition means and said inner surface of said side wall has in a plane normal to said axis an area of substantially less than one half the



area of the interior of said container which is surrounded by said side wall and situated in a plane normal to said axis, so that particles suspended in a liquid introduced into said container to an elevation substantially higher than said partition means will settle into said lower chamber to enable at least part of the liquid in said upper chamber to be poured out of the container in a condition substantially free of any suspended particles while, thereafter, the liquid in the lower chamber with the particles which have settled therein can also be poured out of the container, said partition means having an upper surface facing said open top of said container and a lower surface facing said closed bottom of said container, and said upper surface of said partition means being inclined with respect to said axis and having its lowest elevation situated at said free edge, said partition means including upper and lower walls both of which are integral with said side wall of said container, said upper and lower walls of said partition means intersecting at said free edge thereof and said upper and lower surfaces of said partition means respectively forming parts of said upper and lower walls thereof, said container having an exterior vertical wall extending between and formed integrally with said upper and lower walls of said partition means.

4,119,545

CONCENTRATED FABRIC SOFTENING COMPOSITION

Georges Jean Paul Chazard, Bezons, and Monique Seugnet, Colombes, both of France, assignors to Colgate Palmolive Company, New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 777,993
Int. Cl.[2] D06M *13/46*
U.S. Cl. 252—8.8 **8 Claims**

1. A concentrated fabric softening composition comprising from about 0.01 to about 5% by weight of an antigelling agent selected from the group consisting of alkali metal nitrates and alkali metal nitrites, from about 8 to about 20% by weight of a cationic fabric softening agent, and the remainder being substantially water.

4,119,546

PROCESS FOR PRODUCING XANTHOMONAS HYDROPHILIC COLLOID, PRODUCT RESULTING THEREFROM, AND USE THEREOF IN DISPLACEMENT OF OIL FROM PARTIALLY DEPLETED RESERVOIRS

William C. Wernau, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 711,843, Aug. 5, 1976, abandoned. This application May 3, 1977, Ser. No. 793,274
Int. Cl.[2] E21B *43/20*; C12B *1/00*; C12D *13/04*
U.S. Cl. 252—8.55 D **14 Claims**

1. A process for preparing a Xanthomonas colloid-containing fermentation broth suitable for the preparation of mobility control solutions used in oil recovery which comprises aerobically fermenting a Xanthomonas organism in an aqueous nutrient medium whose ingredients comprise a carbohydrate, a nitrogen source, about 0.1 to 10 grams per liter of an assimilable Krebs cycle acid, about 1 to 200 ppm chelated calcium, about 0.25 to 20 ppm iron and trace elements until at least about 100 ppm colloid is present in the broth, whereby the whole broth produced provides mobility control solutions of about 100 to 3000 ppm Xanthomonas colloid content which are substantially free of insoluble matter having a particle size greater than about 3 microns.

9. In the process for the recovery of crude oil from an oil-bearing subterranean formation wherein a hydrophilic colloid-containing mobility control solution is injected into said formation, the improvement which comprises injecting into said formation a mobility control solution containing a fermentation broth obtained by the process of claim **1**.

4,119,547

HIGH TEMPERATURE LUBRICANT COMPOSITION

Elliot S. Nachtman, Evanston, and Ronald G. Hitchcock, Chicago, both of Ill., assignors to Tower Oil & Technology Co., Chicago, Ill.

Filed Jul. 12, 1976, Ser. No. 704,296
Int. Cl.[2] C10M *1/10*
U.S. Cl. 252—25 **9 Claims**

1. A high temperature lubricating composition consisting essentially of (a) a high temperature liquid lubricant (b) a surfactant having an HLB number below 7 and which is soluble in the liquid lubricant, (c) a finely divided, solid, high temperature lubricant selected from the group consisting of graphite, molybdenum disulfide, mica, boron nitride and potassium iodide, (d) water, (e) a water soluble component selected from the group consisting of a low molecular weight alcohol, glycol, amine, and inorganic salt, elements (a), (b), and (c) being present in a continuous phase and elements (d) and (e) being present as a discontinuous phase dispersed in the continuous phase, with the continuous phase making up 55 to 90% by weight of the composition and the discontinuous phase making up the remainder and in which the surfactant is present in an amount within the range of up to 20% by weight of the continuous phase, the finely divided high temperature solid lubricant is present in an amount within the range of 10–30% by weight of the continuous phase and the water soluble component is present in an amount up to 25% by weight of the discontinuous phase.

4,119,548

REACTION PRODUCT OF NICKEL THIOBIS(ALKYLPHENOLATE) AND THIOBIS(ALKYLPHENOL) AND ORGANIC COMPOSITIONS CONTAINING THE SAME

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 28, 1977, Ser. No. 846,308
Int. Cl.[2] C10M *1/54, 3/48;* C07F *15/02, 15/04*
U.S. Cl. 252—42.7 17 Claims

1. An organosulfur-containing complex comprising a nickel (II) thiobis(alkylphenolate) with a thiobisphenol or a thiobis(alkylphenol) prepared by reacting from about 1.1 to about 2.5 moles of a thiobisphenol or a thiobis(alkylphenol) with 1 mole of a nickel thiobis(alkylphenolate) in a paraffinic solvent at temperatures of from about 40° to about 200° C.; all of said alkyl groups contain from 1 to about 30 carbon atoms.

8. A composition comprising a major proportion of an organic medium normally susceptible to oxidative degradation and a minor amount sufficient to impart antioxidant properties, ultraviolet stabilization and energy quenching characteristics thereto of a nickel (II) complex as described in claim 1.

4,119,549

SULFURIZED COMPOSITIONS

Kirk Emerson Davis, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 666,546, Mar. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 560,675, Mar. 21, 1975, abandoned. This application Jul. 11, 1977, Ser. No. 814,573
Int. Cl.[2] C10M *1/38, 3/32;* C07G *17/00;* C09B *49/00*
U.S. Cl. 252—45 43 Claims

1. A method for the preparation of a sulfurized composition which comprises the steps of a reacting at about 50°–300° C., under superatmospheric pressure and in the presence of a catalyst, sulfur and hydrogen sulfide with at least one terminal aliphatic monoolefinic compound containing about 3–30 carbon atoms to form a sulfurized mixture; about 0.7–1.2 gram-atoms of sulfur and about 0.1–1.5 moles of hydrogen sulfide being used per mole of monoolefinic compound; and removing from said sulfurized mixture substantially all low boiling materials including unreacted monoolefin, mercaptan and monosulfide.

23. A sulfurized composition prepared by the method of claim 1.

37. A lubricating composition comprising a major proportion of lubricating oil and a minor proportion, sufficient to improve extreme pressure, anti-wear or oxidation inhibiting properties, of a sulfurized composition according to claim 23.

4,119,550

SULFURIZED COMPOSITIONS

Kirk Emerson Davis, Euclid, and Thomas Frederick Holden, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 666,545, Mar. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 560,676, Mar. 21, 1975, abandoned. This application Jul. 11, 1977, Ser. No. 814,583
Int. Cl.[2] C10M *1/38, 3/32;* C07G *17/00;* C09B *49/00*
U.S. Cl. 252—45 37 Claims

1. A method for the preparation of a sulfurized composition which comprises the steps of reacting at about 50°–300° C., under superatmospheric pressure, sulfur and hydrogen sulfide with at least one terminal aliphatic monoolefinic compound containing about 3–30 carbon atoms to form a sulfurized mixture; about 0.7–1.2 gram-atoms of sulfur and about 0.1–1.5 moles of hydrogen sulfide being used per mole of monoolefinic compound; and removing from said sulfurized mixture substantially all low boiling materials including unreacted monoolefin, mercaptan and monosulfide.

17. A sulfurized composition prepared by the method of claim 1.

31. A lubricating composition comprising a major proportion of lubricating oil and a minor proportion, sufficient to improve extreme pressure, anti-wear or oxidation inhibiting properties, of a sulfurized composition according to claim 17.

4,119,551

SYNTHETIC AIRCRAFT TURBINE LUBRICATING OIL COMPOSITIONS

Roberta Yaffe, Glenham, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Jun. 28, 1977, Ser. No. 810,715
Int. Cl.[2] C10M *1/24, 1/48*
U.S. Cl. 252—46.7 9 Claims

1. A synthetic lubricating oil composition for a gas turbine engine comprising a major portion of an aliphatic ester base oil having lubricating properties formed from the reaction of pentaerythritol and an organic monocarboxylic acid having from about 2 to 18 carbon atoms per molecule and containing:

(a) from about 0.3 to 5 percent by weight of the lubricating oil composition of an alkyl or alkaryl phenyl naphthylamine in which the alkyl radical has from 4 to 12 carbon atoms and the alkaryl radical has from 7 to 12 carbon atoms,

(b) from about 0.3 to 5 percent by weight of a dialkyldiphenylamine in which the alkyl radicals have from 4 to 12 carbon atoms,

(c) from about 0.001 to 1 percent by weight of a polyhydroxy-substituted anthraquinone,

(d) from about 0.25 to 10 percent by weight of a hydrocarbyl phosphate ester in which said hydrocarbyl radical contains an aryl ring and contains from about 6 to 18 carbon atoms, and

(e) from about 0.05 to about 0.1 percent by weight of bis(-dialkylthiocarbamyl) sulfide containing from 1 to 6 carbon atoms in each alkyl group, linear or branched.

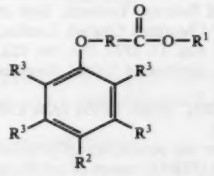
4,119,552

LUBRICANT ADDITIVE

Bryan Terence Davis, and Monty Frederick Crook, both of Wokingham, England, assignors to Edwin Cooper and Company Limited, Bracknell, England

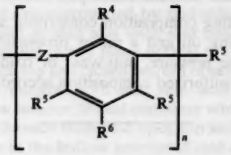
Filed Feb. 22, 1977, Ser. No. 770,579
Claims priority, application United Kingdom, Feb. 25, 1976, 7478/76
Int. Cl.[2] C10M *1/54*
U.S. Cl. 252—49.6 22 Claims

1. A boronated product useful as a lubricating oil dispersant made by reacting an initial compound having the formula:



wherein:

(a) each R^3 is the same or different and is a hydrogen atom, an alkyl group containing from 1 to about 16 carbon atoms, a halogen atom, or one R^3 group in the ortho position relative to the oxygen atom is a group of the formula:



in which

(i) n is an integer from 1 to 6,

(ii) each Z is the same or different and is a methylene group or a sulfur chain of formula $(S)_m$ wherein m is from 1 to 4,

(iii) each R^4 is the same or different and is a hydrogen atom, an alkyl group containing from 1 to 16 carbon atoms, a halogen atom, a hydroxyl group or a group of formula

(iv) each R^5 is the same or different and is a hydrogen atom, an alkyl group containing from 1 to 16 carbon atoms, a halogen atom, or a hydroxyl group, provided that one of, but not more than one of, R^4 and R^5 is a hydroxyl group,

(v) each R^6 is the same or different and is a hydrogen atom, an alkyl group containing 1 to 29 carbon atoms, a halogen atom or is as R^2, provided that one group R^3 in the ortho position relative to the oxygen atom attached to the aromatic nucleus is a hydrogen, a halogen, or a methyl or ethyl group,

(b) each R is the same or different and is a straight or branched chain alkylene group containing from 1 to 20 carbon atoms,

(c) each R^1 is the same or different and is a hydrogen atom or the ester residue of an alkanol containing from 1 to 5 carbon atoms, and

(d) each R^2 is the same or different and is an alkyl group containing at least 30 carbon atoms;

with about 0.5 to 10 equivalents per mole of said initial compound of an amine containing a reactive hydrogen atom bonded to nitrogen to form an amide and reacting said amide with a boron compound capable of introducing boron into the molecule, said boron compound being selected from the group consisting of boron acids, salts of boron acids, esters of boron acids, boron oxides, boron halides and boron salts of oxygen acids, to obtain a boronated product containing at least 0.01 atoms of boron per nitrogen atom.

4,119,553

PROCESS FOR THE PRODUCTION OF ESTERS IN THE PRESENCE OF A PYRIDINE BASE

Charles Cane, and Bertram Yeomans, both of Hull, England, assignors to BP Chemicals Limited, London, England

Filed Aug. 11, 1977, Ser. No. 823,933

Claims priority, application United Kingdom, Aug. 18, 1976, 34391/76

Int. Cl.² C07C 67/08; C10M 1/26; C08L 31/06

U.S. Cl. 560—198 **18 Claims**

1. A process for the production of polyisobutenyl succinic acid or anhydride (PIBSA) esters of polyhydric alcohols containing from 3 to 20 carbon atoms and at least 3 hydroxyl groups which comprises reacting PIBSA with at least a stoichiometric amount of a polyhydric alcohol containing from 3 to 20 carbon atoms and at least 3 hydroxyl groups at a temperature in the range of from about 190° to 250° C. in the presence of a pyridine base selected from the group consisting of collidine, 2-methyl-5-ethyl pyridine, and quinoline so that the ester reaction product obtained has an hydroxyl group to ester group ratio in the range of from about 6 to 8.2.

4,119,554

CERAMIC DIELECTRIC COMPOSITION CONTAINING ALKALI METAL OXIDE

Shinobu Fujiwara, Akita, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 683,955, May 6, 1976, abandoned, which is a continuation of Ser. No. 481,141, Jun. 20, 1974, abandoned. This application Aug. 10, 1977, Ser. No. 823,261

Int. Cl.² H01B 3/12

U.S. Cl. 252—63.2 **7 Claims**

1. A ceramic dielectric composition containing as a first component 35 to 93.5% by weight of strontium titanate, 4 to 40% by weight of bismuth trioxide and at least 2.5 but less than 60% by weight of titanium dioxide based on the first component, wherein said composition further contains as a second component at least one alkali metal oxide selected from the group consisting of the oxides of lithium, sodium, potassium, rubidium and cesium, in an amount from 0.1 to 5.0% by weight based on the total amount of said first component.

4,119,555

DIELECTRIC COMPOSITIONS COMPRISING POLYCHLOROBENZENE-ALKYL TERPHENYL MIXTURES

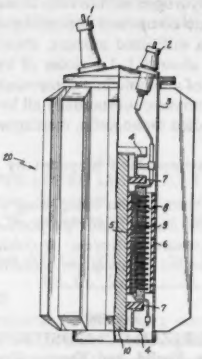
Pierre Jay, Saint-Didier Au Mont D'Or, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Jun. 8, 1977, Ser. No. 804,738

Claims priority, application France, Jun. 8, 1976, 76 18172; Sep. 30, 1976, 76 29982

Int. Cl.² C10M 3/24; H01B 3/24, 3/22

U.S. Cl. 252—66 **18 Claims**



1. A liquid, non-flammable dielectric composition, comprising (1) a polychlorobenzene selected from the group consisting of a trichlorobenzene, a tetrachlorobenzene, and mixtures thereof, and (2) a mono- or polyalkylterphenyl, and mixtures thereof, wherein each alkyl substituent contains from 1 to 5 carbon atoms.

4,119,556

THERMAL ENERGY STORAGE MATERIAL COMPRISING MIXTURES OF SODIUM, POTASSIUM AND MAGNESIUM CHLORIDES

Talbot A. Chubb, 5023 N. 38th St., Arlington, Va. 22207

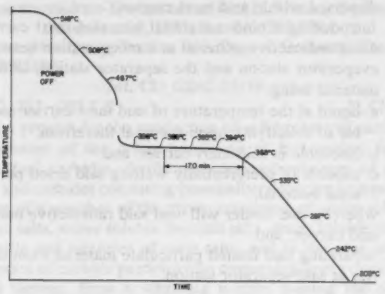
Filed Jun. 1, 1977, Ser. No. 802,395

Int. Cl.² C09K 5/06

U.S. Cl. 252—70 **4 Claims**

1. A thermal energy-storage material which comprises a ternary salt mixture of sodium chloride, potassium chloride,

and magnesium chloride in a $NaCl:KCl:MgCl_2$ weight ratio range of 22.5 to 26.5:18:5 to 22.5:53.0 to 57.0 and an additive salt selected from the class consisting of calcium, barium, strontium chloride, sodium, potassium, and magnesium bromide, sodium, potassium, and magnesium fluoride and mixtures thereof in an amount sufficient to reduce the melting point of said thermal energy-storage material below that of said ternary salt mixture and not to exceed 10 weight percent of the total composition.



4,119,557
BLEACHING COMPOSITIONS AND PROCESS FOR CLEANING FABRICS

Dennis Postlethwaite, Birkenhead, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 15, 1976, Ser. No. 750,787

Claims priority, application United Kingdom, Dec. 18, 1975, 51859/75

Int. Cl.[2] C11D *3/33, 3/395;* **D06L** *3/02*

U.S. Cl. 252—99 **6 Claims**

1. A bleaching and detergent composition for cleaning fabrics comprising from 5% to 50% by weight of an organic surface-active agent selected from the group consisting of anionic, nonanionic, zwitterionic and cationic detergents, and mixtures thereof; from 5% to 80% by weight of builder salts; from 5% to 35% by weight of a persalt selected from the group consisting of alkali metal perborates, alkali metal percarbonates and mixtures thereof; and from 0.05% to 1.0% by weight of a preformed ferric ion chelate complex, said complex being a complex of ferric ion with ethylene diamine tetraacetic acid, nitrilotriacetic acid, diethylene triamine pentaacetic acid, or hydroxyethyl ethylene diamine triacetic acid.

4,119,558
LIQUID CRYSTAL MATERIALS

David Coates, Bishops Stortford, and George William Gray, Cottingham, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

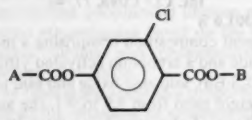
Filed Aug. 4, 1977, Ser. No. 821,919

Claims priority, application United Kingdom, Aug. 13, 1976, 33861/76

Int. Cl.[2] C09K *3/34;* **G02F** *1/13;* **C07C** *69/76, 69/78*

U.S. Cl. 252—299 **21 Claims**

1. A liquid crystal material which is an aromatic diester having the formula.



in which A is a 4-alkylphenyl group and B is a 2-(6-alkyl)naphthyl group or A is a 2-(6-alkyl)naphthyl group and B is a 4-alkylphenyl group wherein the alkyl groups may be the same or different.

4,119,559
UO_2F_2 INCLUSION COMPOUNDS

Edward T. Maas, Jr., Kendall Park, and John M. Longo, New Providence, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

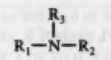
Filed Dec. 21, 1976, Ser. No. 752,734

Int. Cl.[2] C01G *43/00*

U.S. Cl. 252—301.1 R **24 Claims**

1. A composition of matter comprising an inclusion compound formed by reacting UO_2F_2 and an organic Lewis base, the molar ratio of Lewis base to UO_2F_2 in said composition varying in the range from 0.5 to 3.0, said Lewis base selected from the group consisting of

amines of generalized formula

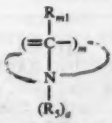


where at least one of radicals R_1, R_2 and R_3 is an aliphatic or an aromatic carbon network with carbon numbers of 1 to 6 with the remaining radicals, if any, being H,

aliphatic heterocyclic amines of generalized formula

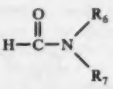
where R_4 is H or an aliphatic radical of cabon number of 1 to 4 and n can assume values of 4 to 6 inclusive and R_{n1} and R_{n2} are each individually H or methyl, each of R_{n1} and R_{n2} being the same or different,

aromatic heterocyclic amines of generalized formula



where m is an integer of 4 to 6 inclusive and $a = 1$ when $m = 4$ or 6 and $a = 0$ when $m = 5$, and R_5 is H or aliphatic radical of carbon number 1 to 4 and R_{m1} is H or methyl,

aliphatic amides of formic acid of generalized formula



where R_6 and R_7 are each individually H or an aliphatic radical of carbon number 1 to 3, each of R_6 and R_7 being the same or different,

alcohols of generalized formula

$$R_8 - O - H$$

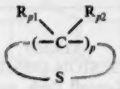
where R_8 is an aliphatic radical of carbon number 1 to 4,

sulfides of generalized formula

$$R_9 - S - R_{10}$$

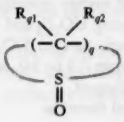
where R_9 and R_{10} are the same or different aliphatic radicals having a carbon number of 1 to 3,

aliphatic heterocyclic sulfides of generalized formula



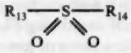
where p is an integer between 4 and 6 inclusive and R_{p1} and R_{p2} are each individually H or methyl, each of R_{p1} and R_{p2} being the same or different,

aliphatic heterocyclic sulfoxides of generalized formula



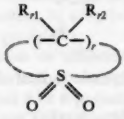
where q is an integer of 4 to 6 inclusive and R_{q1} and R_{q2} are each individually H or methyl, each of R_{q1} and R_{q2} being the same or different,

sulfones of generalized formula



where R_{13} and R_{14} are aliphatic radicals of carbon number 1 to 3,

aliphatic heterocyclic sulfones of generalized formula



where r is an integer of 4 to 6 inclusive and R_{r1} and R_{r2} are each individually H or methyl, each of R_{r1} and R_{r2} being the same or different, and mixtures thereof.

4,119,560

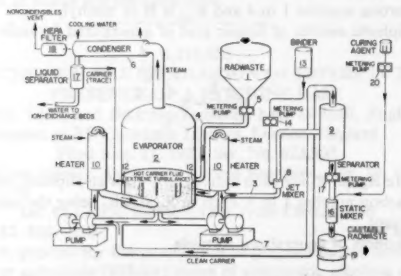
METHOD OF TREATING RADIOACTIVE WASTE

Randall D. Sheeline, San Jose, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 28, 1977, Ser. No. 781,893

Int. Cl.[2] C09K *3/00, 11/04*

U.S. Cl. 252—301.1 W **12 Claims**



1. A process for reducing the volume of aqueous radwaste solutions of solid radioactive materials which process comprises:

a. continuously circulating an inert carrier liquid between an evaporator station and a separator station;

b. introducing said radwaste solution into said inert carrier at said evaporator station under highly turbulent conditions and at a temperature sufficiently above that of the boiling point of said radwaste solution to cause said radwaste solution to flash vaporize under nonexplosive conditions leaving said radioactive material in a dry particulate form dispersed within said inert carrier;

c. introducing a binder material into said inert carrier and dried radioactive material at a mixer station between the evaporator station and the separator station, said binder material being:

a. liquid at the temperature of said inert carrier and capable of solidifying upon removal therefrom,

b. insoluble in said inert carrier, and

c. capable of preferentially wetting said dried particulate solid material;

whereby said binder will coat said radioactive material in said carrier; and

d. separating said coated particulate material from said carrier at said separator station.

4,119,561

METHOD FOR AVOIDING MALFUNCTIONS IN THE SOLIDIFICATION OF AQUEOUS, RADIOACTIVE WASTES IN A GLASS, GLASS CERAMIC OR GLASS CERAMIC-LIKE MATRIX

Stefan Drobnik; Herbert Koschorke, both of Stutensee; Friedrich Kaufmann, and Jaroslav Saidl, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to Gesellschaft für Kernforschung m.b.H., Karlsruhe, Fed. Rep. of Germany

Filed Mar. 17, 1977, Ser. No. 778,711

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2611954

Int. Cl.[2] G21F *9/14*

U.S. Cl. 252—301.1 W **4 Claims**

1. Method for preventing malfunctions in the solidification of radioactive wastes contained in an aqueous waste solution in a glass, glass ceramic or glass ceramic-like matrix, wherein the waste solution is spray-dried and calcinated, comprising adding to the aqueous waste solution, before the spray drying, diatomaceous earth in solid form in quantities of from 45g/l to 70g/l and in grain sizes of which more than 85 percent by weight of the grain size distribution are grain sizes from 6 to 75μ.

4,119,562

FLUORESCENT COMPOSITIONS

Akiyasu Kagami, Ninomiyamachi; Takashi Hase, Fujisawa; Yoshiyuki Mimura, Kamakura; Kinichiro Narita, and Minoru Hiraki, both of Chigasaki, all of Japan, assignors to Dai Nippon Toryo Co. Ltd., Osaka, Japan

Division of Ser. No. 684,674, May 10, 1976, abandoned. This application Jan. 19, 1977, Ser. No. 760,720

Claims priority, application Japan, May 12, 1975, 50-56870; May 13, 1975, 50-57104; May 22, 1975, 50-61281; Jun. 10, 1975, 50-69861; Jun. 10, 1975, 50-69862; Jun. 10, 1975, 50-69863; Aug. 28, 1975, 50-104257; Aug. 29, 1975, 50-104643

Int. Cl.[2] C09K *11/46*

U.S. Cl. 252—301.6 S **2 Claims**

1. A fluorescent composition comprising a mechanical mixture of zinc oxide and a eruopium activated yttrium oxysulfide phosphor (Y_2O_2S:Eu), said zinc oxide and said phosphor being present in a weight ratio from 1:9 to 9:1, the amount of europium contained in said phosphor being from 10^{-2} to 1.5×10^{-1} gram per one gram of yttrium oxysulfide.

4,119,563

PROCESS FOR THE PRODUCTION OF FUEL AND FERTILE PARTICLES

Martin Kadner, Maintal; Karl-Gerhard Hackstein, and Gerhard Spener, both of Hanau, Germany, assignors to Hobeg Hochtemperaturreaktor-Brennelement GmbH, Hanau, Germany

Filed Jan. 14, 1977, Ser. No. 759,550

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601684

Int. Cl.[2] G21C *21/16*

U.S. Cl. 252—301.1 S 31 Claims

1. In a process for the production of solid spherical particles of a member of the group consisting of fuel oxides, fertile oxides, fuel carbides, fertile carbides and mixtures of such oxides and carbides consisting essentially of forcing an aqueous solution of a member of the group consisting of water soluble uranium salts, water soluble thorium salts, water soluble plutonium salts and mixtures of such salts, and in the case of the production of carbide particles also containing finely dispersed carbon therein, from a vibrating nozzle, passing the drops formed thereby through an ammonia containing gas zone and thereafter into an ammonia solution precipitation bath, the improvement consisting essentially of increasing the throughput of drops, employing in the solution passed through said nozzle at least one monomer of the group consisting of (1) water soluble and water miscible monomeric hydrocarbons substituted with at least one member of the group consisting of aldehyde, keto, ether, amino, imino, phenolic hydroxyl, carboxylic acid and carboxylamide group and (2) water soluble and water miscible monomeric heterocyclic compounds substituted with at least one member of the group consisting of carbonyl, imino and nitrile groups, said substituted hydrocarbon or substituted heterocyclic compound forming a stable adduct with uranium, thorium or plutonium in alkaline aqueous solution, said adduct being characterized by not being able to be washed out with water and by not imparting to the solution a viscosity above 15 cp at 20° C., whereby in the case a mixture of more than one monomer is applied there is used such a mixture only in which the monomers do not react with each other forming a resin or polymer at the temperature occurring in the solution and in the falling drops which is between 5° and 40° centrigrade, the mole ratio of the monomer to the total of uranium, thorium and plutonium in the solution being from 0.077 to 3:1, said monomer hardening the drops in the ammonia gas.

4,119,564

OIL-IN-WATER EMULSION AND PROCESS FOR THE PREPARATION THEREOF

Antonius Franciscus Van Dam, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 19, 1977, Ser. No. 788,721

Claims priority, application United Kingdom, Apr. 29, 1976, 17487/76

Int. Cl.[2] B01J *13/00*

U.S. Cl. 252—312 24 Claims

1. An oil-in-water emulsion which contains 0.05 to 5 percent by weight, based upon the quantity of oil, of a phospholipase A-treated phospholipoprotein having a degree of conversion of at least 55 percent, wherein:

(a) said treatment consists of treating said phospholipoprotein with a material consisting of phospholipase A enzyme, and

(b) said degree of conversion is the measure of the percentage of hydrolyzed phophatidyl choline plus hydrolyzed phosphatidyl ethanolamine based on the total amount of phosphatidyl choline plus phosphatidyl ethanolamine present before conversion,

and at least one thickening agent in a proportion which is less than one required for obtaining an emulsion of the same composition and viscosity but containing phospholipoprotein of a lower degree of conversion wherein said thickening agent is selected from the group consisting of hot or cold water soluble starch, carboxymethyl cellulose and gums.

12. A process for the preparation of an oil-in-water emulsion which comprises:

(a) treating a phospholipoprotein with a material consisting of phospholipase A to achieve a degree of conversion of at least 55%, wherein said degree of conversion is the measure of the percentage of hydrolyzed phosphatidyl choline plus hydrolyzed phosphatidyl ethanolamine based on the total amount of phosphatidyl choline plus phosphatidyl ethanolamine present before conversion,

(b) incorporating said phospholipase A-treated phospholipoprotein in said oil-in-water emulsion, and

(c) incorporating in said emulsion at least one thickening agent in a proportion which is less than the one required for obtaining an emulsion of the same composition and viscosity but containing phospholipoprotein of a lower degree of conversion, wherein said thickening agent is selected from the group consisting of hot or cold water soluble starch, carboxymethyl cellulose, and gums.

4,119,565

PRODUCTION OF MICROCAPSULES, AND THE RESULTING MICROCAPSULES

Günther Baatz, Cologne; Manfred Dahm, Leverkusen, and Walter Schäfer, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Apr. 27, 1977, Ser. No. 791,545

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619524

Int. Cl.[2] B01J *13/02*

U.S. Cl. 252—316 5 Claims

1. A method for the production of microcapsules comprising dissolving a film-forming polycarbodiimide with terminal isocyanate groups in a miscible core material or in an inert solvent with dissolved core material, introducing the resulting organic phase into an immiscible aqueous phase which contains a water-soluble catalyst for isocyanate reactions which causes self-condensation of the dissolved film-forming polycarbodiimide, whereby under the influence of intensive mixing microcapsules are formed at the phase interface.

4,119,566

PRODUCTION OF NITROGEN-RICH GAS MIXTURES

William B. Crouch, Whittier; Carolina P. Fabiero nee Posadas, Roland Heights, and Allen M. Robin, Anaheim, all of Calif., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 617,601, Sep. 29, 1975, Pat. No. 4,057,510. This application May 27, 1977, Ser. No. 801,138

Int. Cl.[2] C01B *2/14, 2/00*

U.S. Cl. 252—372 4 Claims

1. In the partial oxidation of a hydrocarbonaceous feedstock selected from the group consisting of hydrocarbonaceous fuel, liquid oxygenated hydrocarbonaceous material, and mixtures thereof with air and optionally in the presence of a supplemental temperature moderator in the reaction zone of a free-flow, noncatalytic, unpacked, refractory lined gas generator at a pressure in the range of about 1 to 250 atmospheres and a temperature in the range of about 1300° to 3000° F to produce an effluent gas mixture comprising H_2, CO, H_2O, CO_2, H_2S, COS, N_2 and A, the improvement comprising: reacting said hydrocarbonaceous feedstock containing no metals nor noncombustible materials with air and supplemental H_2O in the range of nil to 1.0 pounds of H_2O per pound of fuel, and wherein the O/C atomic ratio is in the range of 2 to 3.8 when said hydrocarbonaceous feedstock is a gaseous hydrocarbonaceous fuel, and in the range of about 2 to 2.8 when said hydrocarbonaceous feedstock is a liquid hydrocarbonaceous fuel or liquid oxygenated hydrocarbonaceous material; producing an effluent gas mixture comprising N_2, A and CO_2, and containing at least one gas from the group H_2, CO, H_2O, COS and H_2S, and being free from particulate carbon, free-oxygen and nitro-

gen oxides; removing at least one gas from the group CO_2, H_2O, COS, H_2S, H_2, and CO in a gas drying and purification zone to produce a nitrogen-rich gas mixture; and introducing said nitrogen-rich gas mixture into a vessel as a blanketing or pressurizing gas.

4,119,567

VINYL ACETATE CATALYST

Raymond C. Bartsch, Wyoming, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 641,799, Dec. 18, 1975, abandoned. This application Dec. 14, 1976, Ser. No. 750,491

Int. Cl.[2] B01J *21/04, 23/44, 23/52, 31/04*

U.S. Cl. 252—430 **6 Claims**

1. A supported catalyst composition for the preparation of unsaturated organic esters from a olefinic compound, oxygen and a lower carboxylic acid in the vapor phase, the catalyst containing from about 0.5 to 2.0% by weight palladium metal, and wherein the catalyst is supported on alumina having a crystalline alpha-alumina content of greater than about 96%, a theta-alumina content of less than about 3%, a total calcium and magnesium content of less than about 750 ppm, a surface area of from about 2 to 6 m^2/g, an average crush strength of from 20 to 45 lbs, a bulk density of less than about 1.35 g/cc, and an acetic acid loading of less than about 1.5 in 200 hours.

4,119,568

SOLID SUPPORTED CATALYSTS FOR CATALYTIC REDUCTION OF NITROGEN OXIDES IN WASTE GASES

Fusao Nishida, Tokyo; Hiroo Matsuoka, Ebina; Tomiaki Yamada, Yokohama, and Goro Sato, Kitakyushu, all of Japan, assignors to Japan Gasoline Company, Ltd., Tokyo, Japan

Filed Dec. 24, 1975, Ser. No. 644,462

Claims priority, application Japan, Dec. 28, 1974, 50-2092

Int. Cl.[2] B01J *27/02, 27/18*

U.S. Cl. 252—437 **14 Claims**

1. In a method for the preparation of a catalyst for the reduction of nitrogen oxides in waste gases utilizing ammonium as the reducing agent;

said catalyst comprising an alumina or silica-alumina type carrier supporting a compound or mixture of compounds selected from the group consisting of oxides, sulfates and phosphates of a first transition metal of the Periodic Table;

which method comprises supporting at least one salt of a first transition metal of the periodic table on said carrier, drying at 100° C to 150° C and threafter calcining at 300° C to 600° C to form said compound or mixture of compounds;

the improvement which comprises preparing the carrier by adding powdered alumina or powdered silica-alumina to an aqueous solution containing a reagent selected from the group consisting of aluminum sulfate, sulfuric acid, ammonium sulfate, and ammonium sulfite and thereafter kneading, molding and drying the mixture at 100° C to 150° C followed by calcination at 300° C to 600° C;

thereby to produce a carrier containing from 0.03 to 20% by weight sulfur, based on the weight of the carrier when calculated as a sulfate or sulfite radical, and having a specific surface area of at least 50 m^2/g and a pore volume of from 0.5 to 1.5 cc/g.

4,119,569

OLEFIN POLYMERIZATION CATALYST

Richard E. Dietz, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 363,482, May 24, 1973, abandoned, which is a division of Ser. No. 89,047, Nov. 12, 1970, abandoned. This application May 2, 1977, Ser. No. 792,732

The portion of the term of this patent subsequent to Jun. 3, 1992, has been disclaimed.

Int. Cl.[2] B01J *37/02, 29/00;* **C08F** *4/00*

U.S. Cl. 252—452 **11 Claims**

1. A catalyst prepared by

a. adding a titanium compound to a mineral acid;

b. introducing an alkali metal silicate into the acid containing said titanium compound to form a hydrogel;

c. aging the hydrogel for a time of greater than one hour;

d. washing the thus aged hydrogel to produce a substantially alkali metal-free hydrogel;

e. forming a mixture comprising the thus washed hydrogel and a normally liquid oxygen-containing, water soluble organic compound;

f. separating said organic compound and water from said mixture to form a xerogel; and,

g. heating said xerogel also containing chromium at a temperature of 900° to 1800° F.

5. A catalyst according to claim 1 in which said acid contains a chromium-containing compound convertible to chromium oxide.

4,119,570

SOLID SOLUTION CATALYST CONTAINING IRON CATIONS FOR THE OXYCHLORINATION OF AN ALKANE

William Joseph Kroenke, Brecksville, and Paul Peter Nicholas, Broadview Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 564,794, Apr. 3, 1975, abandoned. This application Nov. 15, 1976, Ser. No. 741,910

Int. Cl.[2] B01J *21/04, 23/10, 23/74*

U.S. Cl. 252—466 J **4 Claims**

1. A solid solution catalyst consisting essentially of iron cations substituted for aluminum cations in a host lattice selected from the group consisting of α—Al_2O_3, β—Al_2O_3, $BaAl_{12}O_{19}$ and $Ba_{0.50}Ce_{0.17}Ag_{0.33}Al_{12}O_{19}$, said catalyst prepared by employing a calcinating step at temperatures above about 1100° C. and having an iron content of from about 0.5 percent to 70 percent by weight, expressed as the oxide, and having an X-ray diffraction pattern having peak positions different than that of the host lattice.

4,119,571

PELLET TYPE OXIDATION CATALYST

Louis Hegedus, Grosse Pointe Woods, and Jack C. Summers, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 658,031, Feb. 13, 1976, Pat. No. 4,051,073. This application Jul. 15, 1977, Ser. No. 815,791

The portion of the term of this patent subsequent to Sep. 27, 1994, has been disclaimed.

Int. Cl.[2] B01J *21/04, 23/42, 23/44*

U.S. Cl. 252—466 PT **7 Claims**

1. A noble metal pellet-type oxidation catalyst comprising a porous alumina support member having a surface area of at least 100 m^2/g. up to about 250 m^2/g., a pore structure characterized by a macropore volume of at least 0.020 cm^3/g. up to the value at which the catalyst is not able to sustain the load and vibration forces in the converter and a macropore radius greater than about 10,000 A°, and a catalyst material selected from the group consisting of platinum and platinum/palladium deposited on said support to a depth of at least 90 microns up to about 250 microns, said pore structure serving to increase the diffusivity of the reactants into the interior of the catalyst,

the surface area serving to compensate for the otherwise accelerated rate of poisoning caused by the increase in diffusivity, and the depth of deposit being such that the catalyst poisons do not break through the zone of deposit prior to the desired lifetime of the catalyst.

4,119,572
CARBON-GRAPHITE MATERIAL FOR BRUSHES OF ELECTRIC MACHINES AND METHOD FOR PREPARING SAME

Georgy Nikolaevich Fridman, Leninsky prospekt, 67, kv. 40; Jury Nikolaevich Vasiliev, ulitsa Vostrukhina, 6, korpus 3, kv. 67; Abram Samoilovich Fialkov, Kutuzovsky prospekt, 9, kv. 95; Vladimir Petrovich Sosedov, 1 Vladimirskaya ulitsa, 24, korpus 2, kv. 26; Alexandr Andreevich Tarasov, ulitsa Schepkina, 47, kv. 6; Yakov Gilievich Davidovich, Molodezhnaya ulitsa, 3, kv. 333; Nikolai Sergeevich Voronin, Gruzinsky val, 18/15, kv. 98; Alexei Gavrilovich Shirokov, Teply stan, 1 mikroraion A, korpus 15, kv. 92; Alexandr Iudovich Sokolovsky, ulitsa Salyam Adilya, 9, korpus 1, kv. 58, all of Moscow; Anatoly Alexandrovich Kozyrev, Sovetskaya ulitsa, 24, kv. 5, Elektrogorsk Moskovskoi oblasti; Roza Petrovna Berlizova, 1 Vladimirskaya ulitsa, 22, korpus 2, kv. 16; Evgeny Mikhailovich Kozlov, Armyansky pereulok, 9, kv. 59, both of Moscow; Anatoly Alexeevich Boiko, Komsomolskaya ulitsa, 7, kv. 38, Elektrougli Moskovskoi oblasti; Andrei Nikolaevich Gusev, Malakhitovaya ulitsa, 14, kv. 79, Moscow; Olga Borisovna Kazakova, ulitsa Sovetskaya 5, kv. 25, Elektrougli Moskovskoi oblasti; Valery Alexeevich Fugol, Savinskaya naberezhnaya, 19, kv. 64, Moscow; Nadezhda Vasilievna Kalinina, Ketcherskaya ulitsa, 8, korpus 1, kv. 42, Moscow; Valentina Mikhailovna Emelyanova, 13 Parkovaya ulitsa, 20, korpus 3, kv. 62, Moscow, all of U.S.S.R.; Abram Yakovlevich Gluskin, deceased, late of Moscow, U.S.S.R., and by Boris Abramovich Gluskin, administrator, Posledny pereulok, 8, kv. 4, Moscow, U.S.S.R.

Continuation of Ser. No. 628,562, Nov. 4, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,771

Int. Cl.[2] H01B *1/06;* **H01R** *39/26*

U.S. Cl. 252—506 **2 Claims**

1. A carbon-graphite material for brushes of electric machines impregnated with a mixture of manganese ultraphosphate and zinc ultraphosphate evenly distributed throughout the entire volume of the material in an amount of from 0.1 to 15% by weight and the ultraphosphates are sealed by a mixture of 80% by weight of cobalt linoleate containing up to 15% cobalt oxide and 20% by weight of glyptal resin with melamine in a ratio 5:1, the mixture being present in an amount of from 0.5 to 10% by weight, enhancing the contact characteristics of the carbon-graphite material.

4,119,573
GLAZE RESISTOR COMPOSITION AND METHOD OF MAKING THE SAME

Toru Ishida; Masumi Hattori, both of Hirakata; Shinichi Tanaka; Tomi Sato, both of Neyagawa, and Kenji Kuwahara, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 27, 1977, Ser. No. 846,496

Claims priority, application Japan, Nov. 10, 1976, 51/136088; Nov. 10, 1976, 51/136089

Int. Cl.[2] H01B *1/00;* **H01C** *7/02, 7/04*

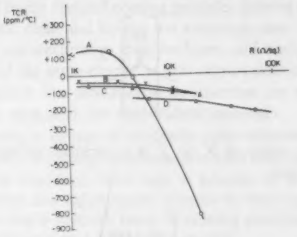
U.S. Cl. 252—519 **18 Claims**

1. A glaze resistor composition consisting essentially of 7 to 50 weight percent of a silicide component and 93 to 50 weight percent of a glass frit, said silicide component consisting essentially of magnesium silicide, molybdenum disilicide and tantalum disilicide, wherein the molar ratio of the sum of molybdenum disilicide and tantalum disilicide to magnesium silicide is from 30/70 to 90/10, and the molar ratio of molybdeum disilicide to tantalum disilicide is from 90/10 to 70/30.

4. A glaze resistor composition according to claim 1, wherein said silicide component further contains 1 to 50 molar percent of manganese disilicide.

6. A glaze resistor composition consisting essentially of 7 to 30 weight percent of a silicide component and 93 to 70 weight percent, in total, of aluminum oxide and a glass frit, said silicide component consisting essentially of magnesium silicide, molybdenum disilicide and tantalum disilicide, wherein the molar ratio of the sum of molybdenum disilicide and tantalum disilicide to magnesium silicide is from 30/70 to 90/10, the molar ratio of molybdenum disilicide to tantalum disilicide is from 90/10 to 70/30, and the weight ratio of said silicide component to aluminum oxide is from 30/58.5 to 70/10.

11. A method of making a glaze resistor, comprising the steps of: preparing a starting powder mixture of a silicide component, aluminum oxide and a first glass frit, the weight ratio of said silicide component to the sum of aluminum oxide and said first glass frit being from 30/70 to 70/30, the weight



ratio of aluminum oxide to said first glass frit being from 1/2 to 5/1, and said silicide component consisting essentially of magnesium silicide, molybdenum disilicide and tantalum disilicide, wherein the molar ratio of the sum of molybdenum disilicide and tantalum disilicide to magnesium silicide is from 30/70 to 90/10, and the molar ratio of molybdenum disilicide to tantalum disilicide is from 90/10 to 70/30; compressing said starting powder mixture into a compressed body; first heating said compressed body at a temperature between 700° C and 1300° C; grinding the thus heated body into granules; mixing said granules with a second glass frit in an amount such that said silicide component is in a range from 7 to 30 weight percent, and the sum of said aluminum oxide and first and second glass frits is in the range from 93 to 70 weight percent on the basis of the sum of said silicide component, aluminum oxide, and first and second glass frits; and second heating the thus prepared mixture at a temperature between 750° C and 1000° C.

4,119,574
4-HYDROXY-2,4,6,6-TETRAMETHYL CYCLOHEX-2-EN-1-ONE PERFUME COMPOSITIONS

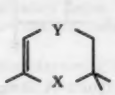
Kenneth K. Light, Long Branch; Bette M. Spencer, Ocean Grove; Joaquin F. Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Manfred Hugo Vock, Locust, N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 774,059, Mar. 3, 1977, Pat. No. 4,084,009. This application Nov. 15, 1977, Ser. No. 851,681

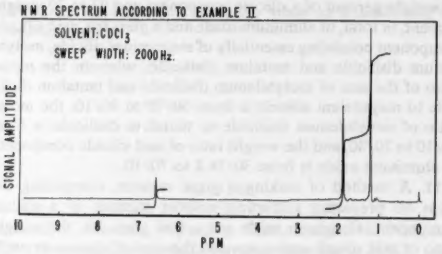
Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **3 Claims**

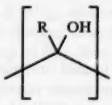
1. The process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes, which comprises adding thereto a small but effective amount of a cyclohexenone derivative having the structure:



wherein one of X or Y is a keto group having the structure:



and the other of X or Y is a carbinol group having the structure:



and wherein R is C_1-C_5 alkyl.

4,119,575

POLYCYCLIC ALCOHOL PERFUME COMPOSITIONS

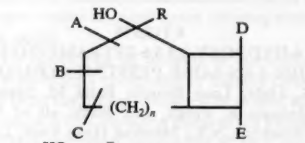
Jordan J. Bloomfield, and Dennis C. Owsley, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 645,182, Dec. 29, 1975, Pat. No. 4,044,057. This application Feb. 28, 1977, Ser. No. 772,608

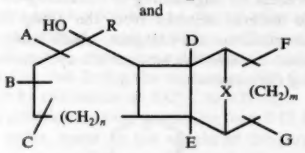
Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **24 Claims**

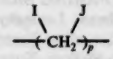
1. A fragrance composition having incorporated therein an odoriferous amount of a compound represented by the structural formulae:



and



wherein *n* is an integer 0 or 1; A, B and C each independently represent hydrogen or alkyl having from 1 to 3 carbon atoms, provided that when *n* is 0 at least one of A, B or C cannot be hydrogen; R represents hydrogen or an alkyl having from 1 to 6 carbon atoms; D and E each independently represent hydrogen or alkyl having from 1 to 6 carbon atoms, provided that the sum of the carbon atoms in D and E does not exceed 6, provided that, in the bicyclo compounds, at least one of A, B, C, D or E must be alkyl; *m* is an integer 1 through 8; F and G represent hydrogen or alkyl having from 1 to 3 carbon atoms; X represents



wherein *p* is an integer 0 through 2 and I and J each independently represent hydrogen or methyl, provided that if *p* is 0 then *m* must be greater than 2; provided that the sum of the carbon and oxygen atoms in the compound is no greater than 23, and at least one carrier commonly used in fragrance compositions.

4,119,576

PERFUME COMPOSITIONS AND COLOGNES CONTAINING 1-BUTANOYL-3,3-DIMETHYLCYCLOHEXANE

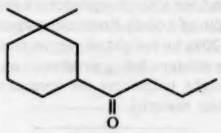
Mark A. Sprecker, Sea Bright; Manfred Hugo Vock, Locust; Frederick Louis Schmitt, Holmdel; John B. Hall, Rumson, and James Milton Sanders, Eatontown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 740,948, Nov. 11, 1976, Pat. No. 4,081,481, which is a continuation-in-part of Ser. No. 713,357, Aug. 11, 1976, Pat. No. 4,062,894. This application Nov. 15, 1977, Ser. No. 851,724

Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **3 Claims**

1. A process for augmenting or enhancing the organoleptic properties of a consumable material selected from the group consisting of perfume compositions and colognes which comprises adding thereto a small but effective perfuming quantity of 1-butanoyl-3,3-dimethylcyclohexane represented by the structure:



4,119,577

SUBSTITUTED-NORBORNANE PERFUMES COMPOSITIONS

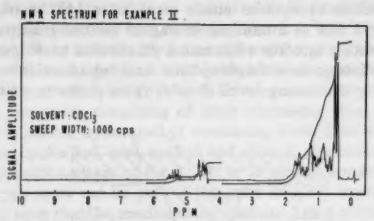
Kenneth K. Light, Long Branch; James Milton Sanders, Eatontown; Manfred Hugo Vock, Locust, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Joaquin Vinals, Red Bank, N.J.; William L. Schreiber, Jackson, N.J.; John B. Hall, Rumson; Denis E. Hruza, Sr., Bricktown, N.J.; Venkatesh Kamath, Red Bank, N.J.; Braja Dulal Mookherjee, Holmdel, N.J.; Ching Y. Tseng, Middletown, and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

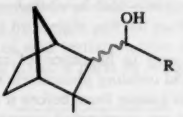
Division of Ser. No. 765,847, Feb. 4, 1977, Pat. No. 4,076,853. This application Dec. 13, 1977, Ser. No. 860,125

Int. Cl.[2] C11B *9/00*

U.S. Cl. 252—522 **8 Claims**

1. A perfume composition comprising one or more norbornane derivatives having the structure:





wherein R is C_3 and C_4 alkenyl and at least one adjuvant selected from the group consisting of natural perfume oil, synthetic perfume oil, alcohols other than said norbornane derivatives, aldehydes, ketones, nitriles, esters and lactones.

4,119,578

HYDROSOLUBLE BAR FOR USE IN TOILET BOWLS AND METHOD OF MAKING SAME WHICH INCLUDES AN EXTRUSION STEP

Jean Daeninckx, Paris, and Bernard Chesbeuf, Saint Maur, both of France, assignors to L'Oreal, Paris, France

Filed May 3, 1976, Ser. No. 682,465
Claims priority, application France, May 2, 1975, 75 13815
Int. Cl.[2] C11D *1/14, 3/24, 3/32*
U.S. Cl. 252—548 **7 Claims**

1. Composition for extruding a hydrosoluble toilet bowl bar which is solid at room temperature and adapted to dissolve in the flushing water of a toilet bowl, said composition comprising 10–40% by weight of paradichlorobenzene, 5–30% by weight of a paraffin sulfonate which improves the cohesion and consistency of the composition and is constituted by sulfonated alkyl chains having 14–16 carbon atoms 5–30% of a foamable anionic detergent other than a paraffin sulfonate, and at least 1–10% of at least one fatty amide which controls the speed of errosion of said bar.

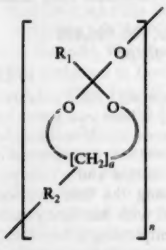
4,119,579

POLYMERIC ORTHOESTERS

Richard Carl Capozza, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 675,185, Apr. 8, 1976, Pat. No. 4,066,747.
This application Sep. 28, 1977, Ser. No. 837,310
Int. Cl.[2] C08G *65/00*
U.S. Cl. 526—270 **16 Claims**

1. A polymer of the general formula:



wherein R_1 is a member selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, cycloalkenyl, and aryl, R_2 is a member selected from the group consisting of alkylene, a cycloalkylene, and a cycloalkenylene, and wherein *a* is 2 to 3, and *n* is greater than 10.

4,119,580

METHOD FOR FORMING AGGLOMERATED ION EXCHANGE RESIN

Frank C. Smith, Jr., Felton, and Richard C. Chang, Santa Clara, both of Calif., assignors to Dionex Corporation, Sunnyvale, Calif.

Filed Nov. 7, 1977, Ser. No. 848,785
Int. Cl.[2] C08F *220/34;* B01D *15/08*
U.S. Cl. 521—28 **10 Claims**

1. A method for forming a plurality of agglomerated ion exchange particles comprising the steps of

(a) mixing soluble multivalent ions into an aqueous dispersion of finely divided coating particles formed of insoluble synthetic resin and having ion exchange sites with monovalent counterions on their surfaces, said multivalent ions being of the same charge as said monovalent counterions, to displace the monovalent counterions on said ion exchange sites with the multivalent ions and

(b) directing a stream of synthetic resin substrate particles, having ion exchange sites which attract said coating particles ion exchange sites, into a volume of said aqueous dispersion and agitating the mixture to form agglomerates comprising a uniform layer of coating particles affixed to the surface of said substrate particles.

4,119,581

MEMBRANE CONSISTING OF POLYQUATERNARY AMINE ION EXCHANGE POLYMER NETWORK INTERPENETRATING THE CHAINS OF THERMOPLASTIC MATRIX POLYMER

Alan Rembaum, Altadena, and Carl J. Wallace, La Crescenta, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 23, 1977, Ser. No. 771,245
Int. Cl.[2] C08L *39/08;* C08J *5/22;* B01D *15/04*
U.S. Cl. 521—27 **28 Claims**

1. A method of forming an ion-exchange membrane comprising the steps of:

dissolving in common solvent a thermoplastic matrix polymer, a first monomer selected from polytertiary amines or vinyl pyridines and a second monomer selected from organic polyhalides said first and second monomers being capable of reaction to form a cationically charged, polyquaternary, ion-exchange polymer;

evaporating the solvent while reacting the monomers to form said cationically charged, polyquaternary, ion-exchange polymer which forms a network interpenetrating the chains of the matrix polymer.

4,119,582

PROCESS FOR MANUFACTURING HIGH-RESILIENT FLEXIBLE URETHAN FOAMS

Kiyoshi Matsubara; Yuichi Nomura; Tadashi Yatomi; Tadashi Hamamura; Isao Noda; Terumi Watanabe, all of Yokohama; Takao Nomura, Nagoya, and Isao Sakata, Toyoda, all of Japan, assignors to Mitsui-Nisso Corporation; Nippon Unicar Company, Limited, both of Tokyo and Toyota Jidosha Kogyo Kabushiki Kaisha, all of, Japan

Filed Feb. 10, 1976, Ser. No. 656,979
Claims priority, application Japan, Feb. 11, 1975, 50/17295
Int. Cl.[2] C08G *18/63;* C08K *5/54*
U.S. Cl. 521—112 **7 Claims**

1. In a process for manufacturing high-resilient flexible urethan foams by reacting and foaming polyalkylene ether polyol component and an organic polyisocyanate component in the

presence of a blowing agent, a surfactant and catalyst, the improvement comprising

(1) using, as said polyalkylene ether polyol component, a polyalkylene ether polyol
  (a) containing 2 to 10% by weight of a vinyl polymer which is prepared by dissolving a vinyl monomer in polyalkylene ether polyol and by polymerizing said vinyl monomer in said polyalkylene ether polyol,
  (b) having a hydroxyl number which ranges from 25 to 60 mg KOH/g, and
  (c) having a primary hydroxyl group content of 20 to 70 mol% and the remaining hydroxyl groups being secondary hydroxyl groups;
(2) using, as said organic polyisocyanate component, a mixture of tolylene diisocyanate with either diphenylmethane diisocyanate or a crude diphenylmethane diisocyanate; and
(3) using, as said surfactant, a mixture of a high-molecular-weight siloxane-oxyalkylene copolymer with a separately prepared low-molecular-weight siloxane-oxyalkylene copolymer, said high-molecular-weight siloxane-oxyalkylene copolymer being a hydrolyzable siloxane-oxyalkylene copolymer expressed by the general formula

$$(R')(SiO_3)_x(R_2SiO)_y\{((C_nH_{2n}O)_zR'')_a\{R'''\}_{3x-a}$$

wherein x is an integer of at least 1; y is an integer of at least 3; z is an integer of at least 5; a is an integer of 1 to $3x$; n is an integer of 2 to 4; R is a monovalent hydrocarbon group; R' is an x-valent hydrocarbon group; R'' is a monovalent hydrocarbon group; and R'''is an alkyl group or trihydrocarbylsilyl group, said copolymer containing 10 to 80% by weight of polysiloxane units and 90 to 20% by weight of polyoxyalkylene units, having polysiloxane chains and polyoxyalkylene chains bonded with a C—O—Si bond and having a molecular weight of 1,000 to 16,000 and said low-molecular-weight siloxane-oxyalkylene copolymer being a hydrolyzable siloxane-oxyalkylene copolymer expressed by the formula

$$(R')(SiO_3)_x(R_2SiO)_y\{(C_nH_{2n}O)_zR''\}_a\{R'''\}_{3x-a}$$

wherein x is an integer of at least 1; y is an integer of at least 3; z is an integer of 0 or 1 to 4; a is an integer of 1 to $3x$; n is an integer of 2 to 4; R is a monovalent hydrocarbon group; R' is an x-valent hydrocarbon group; R'' is a monovalent hydrocarbon group; and R''' is an alkyl group or trihydrocarbylsilyl group, said copolymer containing more than 80% by weight of polysiloxane units and less than 20% by weight of polyoxyalkylene units, having polysiloxane chains and polyoxyalkylene chains bonded with a C—O—Si bond and having a molecular weight of 500 to 10,000.

4,119,583
FOAMED ARTICLES AND METHODS FOR MAKING SAME

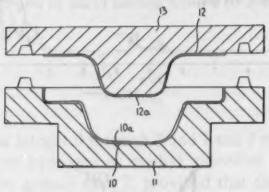
Stanislaw Franz Filip, and Alexander Miutel, both of Toronto, Canada, assignors to KLF Inventions and Patent Development and Marketing Corporation Ltd., Rexdale, Canada

Continuation-in-part of Ser. No. 631,439, Nov. 13, 1975, abandoned, and a continuation-in-part of Ser. No. 479,640, Jun. 17, 1974, abandoned. This application Jan. 31, 1977, Ser. No. 764,416

Int. Cl.[2] B29D *27/00*; C08J *9/ 08*

U.S. Cl. 521—103 **6 Claims**

1. Process for production of foam body of an unsaturated fast curing general purpose polyester resin in viscosity range from 1800 to 3000 CPS, a copolymerizable monomer vinyl compound, a finely divided bicarbonate, finely divided nucleation agent, quantity of tertiary amine hardening accelerator and peroxide catalyst to initiate cross-linking of the resin in two and a half to 6 minutes, mixing of the components and incorporating into the resin mix a 30 percent to 40 percent aqueous inorganic orthophosphoric acid which exhibits progressively decreasing level of activity as it reacts with the



bicarbonate component in liberation of carbon dioxide, the orthophosphoric acid creating phosphoric salts which act as a surfactant to help to sustain foam before it is gelled, mixing of the components at an accelerated tempo until the acid is blended throughout the resin mix and will liberate carbon dioxide before cross-linking reaction has proceeded far enough to gel the resin mix.

4,119,584
PHENOLIC FOAM MODIFIED WITH PHOSPHORUS-CONTAINING ISOCYANATE-TERMINATED PREPOLYMERS

Anthony Joseph Papa, Saint Albans; Richard Lee Rollins, South Charleston, and Frank Edward Critchfield, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 25, 1977, Ser. No. 781,162

Int. Cl.[2] C08G *18/24, 18/50*

U.S. Cl. 521—127 **14 Claims**

1. A process for producing a rigid phenolic foam having a density of up to about 2 pcf. which comprises forming and curing a reaction mixture containing:
  (a) a liquid phenol-aldehyde resole having a viscosity from 200 to 500,000 centipoises at 25° C.,
  (b) from 35 to 75 parts by weight of a phosphorus-containing isocyanate terminated prepolymer per hundred parts of said resole and said isocyanate terminated prepolymer,
  (c) a catalytic amount of an organotin catalyst for the curing of the reaction mixture to produce the elastomer,
  (d) from 0.5 to 5.0 parts by weight of a surface active agent per hundred parts by weight of said resole and said isocyanate terminated prepolymer, and
  (e) a halocarbon blowing agent in an amount sufficient to produce a cellular structure in the foam.

4,119,585
PROCESS FOR PREPARING RIGID POLYURETHANE FOAMS USING LATENT CATALYSTS

James F. Kenney, Mendham, and Kenneth Treadwell, Rahway, both of N.J., assignors to M&T Chemicals Inc., Stamford, Conn.

Filed May 10, 1977, Ser. No. 795,496

Int. Cl.[2] C08G *18/24*

U.S. Cl. 521—118 **13 Claims**

1. In an improved method for preparing a rigid polyurethane foam by reacting a polyol containing at least two active hydrogen atoms, as determined by the Zerewitinoff method, with a polyfunctional isocyanate, the reaction being conducted in the presence of a blowing agent, a surfactant and a catalyst, the improved which resides in increasing the time interval between the combining of said polyol with said isocyanate and the initiation of said reaction by employing a latent catalyst consisting essentially of a mixture containing 1) a diorganotin compound represented by a formula selected from the group

consisting of $R^1R^2SnS_x$, $R^1R^2Sn(SCN)_2$, $(R^1R^2SnSCN)_2S_x$ and $(R^1R^2SnSCN)_2O$ and 2) an amine selected from the group consisting of tertiary amines of the formula $R^3R^4R^5N$ wherein R^1 and R^2 are individually selected from the group consisting of alkyl containing from 1 to 20 carbon atoms, cycloalkyl, aryl, aralkyl and alkaryl, R^3, R^4 and R^5 are individually selected from the group consisting of alkyl containing from 1 to 20 carbon atoms, hydroxyalkyl containing from 2 to 4 carbon atoms, cycloalkyl, aryl, aralkyl and alkaryl, alternatively two of the carbon atoms of the R^3, R^4 or R^5 groups bonded to the nitrogen atom can be part of the same divalent hydrocarbon group such that the resultant ring contains 5 or 6 atoms one of which is the nitrogen atom and wherein the resultant heterocyclic ring can also contain one additional heteroatom such as oxygen, nitrogen or sulfur; and x is an interger from 1 to 4, and wherein the concentration of said diorganotin compound is from 0.1 to 10 parts by weight per 100 parts of said polyol and the concentration of said tertiary amine or heterocyclic tertiary amine is from 0.1 to 4 parts by weight per 100 parts of polyol.

4,119,586
POLYMER/POLYOL COMPOSITIONS, PROCESSES FOR MAKING SAME AND PROCESSES FOR MAKING POLYURETHANE PRODUCTS THEREFROM

Naresh Ramanlal Shah, Nitro, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 699,397, Jun. 24, 1976, abandoned. This application May 17, 1977, Ser. No. 797,666

Int. Cl.[2] **C08G** *18/14, 18/63;* **C08K** *5/06*

U.S. Cl. 521—137 **26 Claims**

1. In a polymer/polyol composition which is convertible by reaction with a polyisocyanate to a polyurethane product wherein said polymer/polyol composition is normally liquid at the temperature at which said composition is converted to said polyurethane product and wherein the polymer of said polymer/polyol composition is formed in situ in a polyol blend containing a polyol having a relatively low theoretical number average molecular weight by polymerizing in the blend one or more polymerizable ethylenically unsaturated monomers, the improvement comprising employing as the blend a polyol blend comprising about 55 to about 95 wt.% of a polyol having a theoretical number average molecular weight not greater than about 4000 and from about 45 to about 5 wt.% of a polyol having a theoretical number average molecular weight of not less than about 5000, in which blend said polymer is stably dispersed as small particles, said polymer being formed in the absence of any alkyl mercaptan and said monomers being substantially free of chemically bound halogen.

17. A method for producing a polyurethane foam by reacting and foaming a mixture comprising (a) the polymer/polyol composition claimed in claim 1, (b) an organic polyisocyanate, (c) a catalyst for the reaction of (a) and (b) to produce the polyurethane, (d) a blowing agent and (e) a foam stabilizer.

4,119,587
ADHESIVE COMPOSITIONS COMPRISING (A) HALOGENATED POLYOLEFIN (B) AROMATIC NITROSO COMPOUND AND (C) LEAD SALTS

Peter J. Jazenski, Wattsburgh, and Louie G. Manino, Erie, both of Pa., assignors to Lord Corporation, Erie, Pa.

Filed Feb. 25, 1977, Ser. No. 772,369

Int. Cl.[2] **C08L** *15/02, 7/00*

U.S. Cl. 260—3.5 **25 Claims**

1. An adhesive composition consisting essentially of

(i) at least one halogen-containing polyolefin

(ii) from about 1 to about 200 parts by weight, per 100 parts by weight of said polyolefin, of at least one aromatic nitroso compound;

(iii) from about 10 to about 150 parts by weight, per 100 parts by weight of said polyolefin, of at least one lead salt of an acid selected from the group consisting of phosphorous acid and organic dicarboxylic acids and acid anhydrides;

(iv) from zero to about 25 parts by weight, per 100 parts by weight of said polyolefin, of at least one one maleimide compound; and

(v) an inert diluent, said diluent being present in an amount to provide a lacquer composition suitable for use as an adhesive, said lacquer having a total solids content in the range from about 5 to about 80 percent.

4,119,588
REVERSION RESISTANT RUBBER COMPOSITIONS WITH THIO CARBAMYL SULFENAMIDES

John Steven Carpino, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 14, 1976, Ser. No. 723,123

Int. Cl.[2] **C08F** *8/34;* **C08L** *7/00*

U.S. Cl. 260—5 **19 Claims**

1. A reversion resistant rubber composition comprising (1) 100 parts by weight of a sulfur vulcanizable rubber of which at least 50 parts by weight of said rubber are selected from the group consisting of natural rubber, cis-polyisoprene and mixtures thereof, and the remaining rubber is selected from at least one of the group consisting of cis-polybutadiene, emulsion polybutadiene, styrene-butadiene, butadiene-acrylonitrile, isoprene-acrylonitrile, polychloroprene, polypentenamer, and isoprene-styrene, (2) from about 0.1 part by weight to about 3 parts by weight of sulfur per 100 parts by weight of sulfur vulcanizable rubber, (3) from about 0.5 part by weight to about 5 parts by weight of a thiocarbamyl sulfenamide per 100 parts by weight of rubber wherein said thiocarbamyl sulfenamide is selected from the group consisting of N,N'-di-(oxydiethylene) thiocarbamylsulfenamide and N,N-dimethyl-N', N'dicyclohexylthiocarbamyl-sulfenamide.

4,119,589
PROCESS FOR FIXING PROTEINS ONTO CARRIERS

Jürgen Horn, Tutzing, Garatshausen; Hans-Georg Batz, Tutzing, Obb., and Dieter Jaworek, Weilheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Jan. 18, 1977, Ser. No. 760,296

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603319

Int. Cl.[2] **C08L** *89/00*

U.S. Cl. 260—6 **13 Claims**

1. Process for immobilizing biologically-active proteins onto a carrier material, which process comprises reacting a compound containing at least two secondary amino groups at a temperature of from $-80°$ to $+50°$ C. with a chlorination agent with the conversion of the secondary amino groups into iminochloride groups of the formula

$$R-C(Cl)=N-R_1$$

in which R and R_1, which can be the same or different, are aliphatic, aromatic or aliphatic-aromatic radicals, and reacting the carrier material product thus obtained

(a) directly with a biologically-active protein, in an aqueous solvent, or

(b) with a bifunctional compound containing at least one primary amino group, optionally in an aqueous or organic solvent, and reacting the product thereby obtained containing groups of the formula

$$R-C(NH-R_2-X)=N-R_1$$

in which R_2 is an alkylene radical, an α,ω-dioxyalkylene

radical or a dicarboxylic acid amide group containing 2 to 8 carbon atoms and X is a primary amino group or a function capable of protein binding either

(i) directly with a protein or

(ii) first with at least one bifunctional or polyfunctional protein reagent and thereafter with a protein or with a reaction product of a protein with the protein reagent.

4,119,590

PROCESS FOR PRODUCING A POLYION COMPLEX HAVING A NUCLEIC ACID BASE

Toru Seita; Akihiko Shimizu, and Yujiro Kosaka, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Division of Ser. No. 687,220, May 17, 1976, Pat. No. 4,066,827. This application Jun. 22, 1977, Ser. No. 809,011

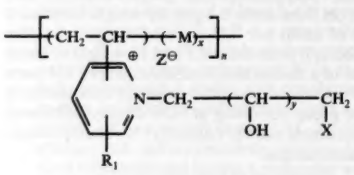
Claims priority, application Japan, 1975, 50-60241; 1975, 50-60242; 1975, 50-62533

Int. Cl.[2] C08L *89/00*

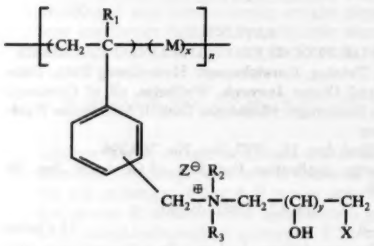
U.S. Cl. 260—8 **10 Claims**

1. A process for producing a polyion complex which comprises reacting a polyanion polymer with a nucleic acid base-containing polycation polymer having the unit formula

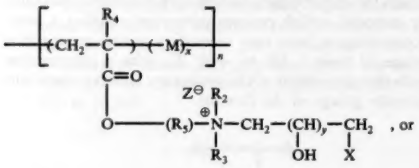
(1)



(2)

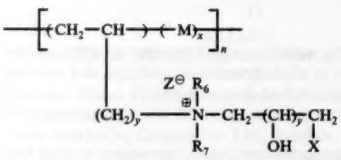


(3)



, or

(4)



wherein R_1 is a hydrogen atom or a C_{1-4} alkyl group; R_2 and R_3 are each a C_{1-10} hydrocarbon group; R_4 is a hydrogen atom or a methyl group; R_5 is a C_{1-6} alkyl group; R_6 and R_7 are each a C_{1-4} alkyl group; M is a vinyl monomer; x is 0 -450,000; **Z is a halogen atom or an hydroxyl group;** y is 0 or 1; n is an integer higher than 10; X is adenine, thymine, cytosine, uracil or a derivative thereof in which a purine nucleus is bonded to the 9-position and a pyrimidine nucleus is bonded to the 1-position.

4,119,591

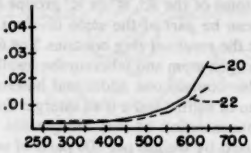
FRICTION MATERIAL REINFORCED WITH STEEL AND CELLULOSE FIBERS

Francis William Aldrich, Troy, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 5, 1977, Ser. No. 812,541

Int. Cl.[2] C08L *1/02*

U.S. Cl. 260—17.2 **10 Claims**



1. An organic friction material for use as a friction lining consisting of a mixture of:

8–50% by volume of a combination of non-asbestos fibers selected from a group consisting of fiber glass, mineral fiber, at least 3% by volume of steel fibers, and at least 5% by volume of cellulose fibers;

12–35% by volume of thermosetting phenolic resin;

5–35% by volume of cashew nut particles;

3–20% by volume of elastomeric modifiers; and

10–55% by volume of inorganic modifiers, said thermosetting phenolic resin being responsive to heat to form a matrix for holding said non-asbestos fibers, cashew nut particles, elastomeric modifiers and inorganic modifiers in a fixed relationship, said non-asbestos fibers and phenolic resin matrix providing structural strength for allowing the friction lining to withstand dynamic repeated engagements with a rotating member and providing a substantially uniform wear rate up to 600° F. during a dynamic engagement.

4,119,592

RUBBERY BLADDERS FROM EPOXY COMPOSITIONS

Walter Thomas Murphy, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 25, 1977, Ser. No. 772,047

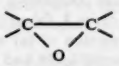
Int. Cl.[2] C08G *59/42, 81/42*

U.S. Cl. 260—18 PF **23 Claims**

1. A liquid polymer composition comprising:

a. a liquid carboxyl-terminated polymer containing polymerized units of a vinylidene monomer, siad polymer having from about 1.4 to about 2.6 carboxyl groups per molecule,

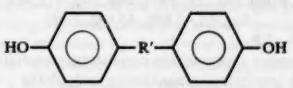
b. an epoxy resin having an average number of



epoxide groups per molecule of from about 1.7 to about 2.3,

c. a plasticizer,

d. a dihydric compound selected from the group consisting of catechol, resorcinol, hydroxybenzyl alcohol, bis benzylic alcohol, dihydroxy napthalene and bisphenols of the formula



where R' is selected from the group consisting of an alkylene group containing 1 to 12 carbon atoms and a bivalent radical containing 1 to 8 atoms of C, O, S, and/or N, and

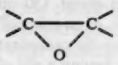
e. 2-ethyl-4-methylimidazole; wherein the equivalent ratio of

the sum of reactants a, d, and e, to epoxy is from about 0.70 to about 1.15.

13. A rubber bladder comprising:

a. a liquid carboxyl-terminated polymer containing polymerized units of a vinylidene monomer, said polymer having from about 1.4 to about 2.6 carboxyl groups per molecule,

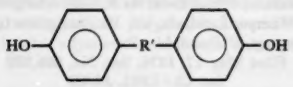
b. an epoxy resin having an average number of



epoxide groups per molecule of from about 1.7 to about 2.3,

c. plasticizer,

d. a dihydric compound selected from the group consisting of catechol, resorcinol, hydroxybenzyl alcohol, bis benzylic alcohol, dihydroxy naphthalene and bisphenols of the formula



where R' is selected from the group consisting of an alkylene group containing 1 to 12 carbon atoms and a bivalent radical containing 1 to 8 atoms of C, O, S, and/or N, and

e. 2-ethyl-4-methylimidazole; wherein the equivalent ratio of the sum of reactants a, d, and e, to epoxy is from about 0.70 to about 1.15.

4,119,593

POLYEPOXIDE HIGH SOLIDS COATINGS

Oliver Wendell Smith, South Charleston, and Joseph Victor Koleske, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 18, 1977, Ser. No. 798,185

Int. Cl.² C09D *3/58*

U.S. Cl. 260—18 EP **19 Claims**

1. A high solids liquid composition comprising (I) from 40 to 90 weight percent of a polyepoxide, (II) from 10 to 60 weight percent of a monocarboxylic acid initiator having a pK_a value of less than 4 and (III) from 0.1 to 10 weight percent of a stannous salt catalyst; said percentages based on the combined weights of (I), (II) and (III); wherein said component (II) is a compound of the general formula:

$$HOOC—R—(COOR')_x$$

wherein

x is an integer having a value of from 0 to 2;

R is

(i) phenyl, or

(ii) naphthyl, or

(iii) —CH=CH— when x is 1;

R' is

(i) an alkyl group having from 1 to 8 carbon atoms, or

(ii) a $—C_nH_{2n}(OC_nH_{2n})_mOC_pH_{2p+1}$ group or

(iii) a $—C_nH_{2n}OOCCX=CH_2$ group;

n is an integer having a value of 2 to 4;

m is an integer having a value of 0 to 7;

p is an integer having a value of 1 to 15; and

X is hydrogen or methyl;

and wherein said component (III) is a stannous acylate of a mono- or dicarboxylic acid having from 1 to 54 carbon atoms or a stannous alkoxide having from 1 to 18 carbon atoms in the alkoxide group; and wherein the equivalent ratio of free carboxyl groups in component (II) to total epoxy groups in component (I) is from 0.05:1 to 0.4:1.

4,119,594

CATALYZED ONE-SHOT SYSTEM FOR MOLDING THERMOSET POLYURETHANES

Stanley A. Iobst, Sterling Heights, and Howard W. Cox, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 31, 1977, Ser. No. 802,139

Int. Cl.² C08G *18/22*

U.S. Cl. 260—18 TN **3 Claims**

1. A method of molding a thermoset polyurethane article comprising;

forming a moldable dispersion of thermosetting polyurethane forming constituents consisting essentially, in chemical equivalents, of;

100 equivalents of an isocyanate selected from the group consisting of diphenylmethane diisocyanate and liquid isocyanate terminated reaction products of diphenylmethane diisocyanate and a diol,

about 40 to 85 equivalents of hydroquinone di-(beta-hydroxyethyl)ether,

an amount of a liquid polyol having a hydroxyl functionality of greater than two and an equivalent weight of the order of 2000, and

a catalytic amount of zinc stearate,

the proportions of said isocyanate, hydroquinone di-(beta-hydroxyethyl)ether, and polyol being such that there is a chemical equivalent excess of up to 10% of said isocyanate, said isocyanate being combined with said other constituents at a temperature below the activation temperature of said zinc stearate so that said dispersion has a room temperature pot life of at least several hours,

introducing said dispersion into a mold, and

heating said dispersion therein to a temperature whereat said catalyst is activated to react said constituents, thereby forming said thermoset polyurethane article.

4,119,595

LOW-TEMPERATURE EPOXY BAKING COMPOSITIONS

Ronald S. Bauer, and John A. Lopez, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 16, 1977, Ser. No. 777,984

Int. Cl.² C09D *3/52*

U.S. Cl. 260—21 **13 Claims**

1. A stable, low-temperature baking composition prepared by the process which comprises:

1. reacting about 1.0 chemical equivalents of an epoxy resin possessing more than one 1,2-epoxide group with from about 0.1 to about 1.0 chemical equivalents of a polymeric fatty acid,

2. reacting the resulting condensate with more than 2% by weight based on the condensate of a strong acid selected from the group consisting of para-toluene sulfonic acid, hydrochloric acid, sulfuric acid and phosphoric acid, for a period from about 2 hours to about 5 days at a temperature from about room temperature to about 250° C., and

3. adding a curing amount of an amino-plast resin.

4,119,596

THERMOSETTING COATING COMPOSITIONS

Takao Okuda, Yokohama, and Akira Wada, Kamakura, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed May 9, 1977, Ser. No. 795,369

Claims priority, application Japan, May 17, 1976, 51-56374

Int. Cl.² C08L *91/00, 61/24, 61/28*

U.S. Cl. 260—21 **10 Claims**

1. In a thermosetting coating composition containing at least one thermosetting aminoalkyd resin composed of 80 to 60% by weight of an alkyd resin and 20 to 40% by weight of an amino resin as a main ingredient of a vehicle, the improvement wherein the composition contains 100 parts by weight of the thermosetting aminoalkyd resin composition and 5 to 50 parts

by weight of a cyclopentadiene-derived hydrocarbon resin having a softening point of 50° to 160° C. and obtained by heat polymerizing a mixture of 85 to 55% by weight of a cyclopentadiene-type monomer with 15 to 45% by weight of a polar monolefinic monomer copolymerizable therewith wherein the cyclopentadiene-type monomer is cyclopentadiene, methyl cyclopentadiene, or a dimer, trimer or codimer of any of these.

4,119,597

ADDITIVE TO BE ADMIXED TO CEMENTS

Takasi Enoue, No. 931, Takemachi, Kagoshim-shi, Kagoshimaken, Japan

Filed Nov. 8, 1976, Ser. No. 739,834
Claims priority, application Japan, Nov. 13, 1975, 50/136541
Int. Cl.[2] C04B *7/02, 7/355, 13/24;* C08L *29/04*
U.S. Cl. 260—23 R **4 Claims**

1. An additive to be admixed to cements comprising a mixture of an aqueous solution (A) of polyvinylalcohol resin which is prepared by mixing, under agitation, polyvinyl alcohol resin with at least one of aluminum sulfate and calcium hydroxide in water, and an aqueous dispersoid (B) which is prepared by dispersing vegetable oil or fat in water in the presence of a dispersing agent.

4,119,598

FIRE RETARDANT UREA-FORMALDEHYDE COMPOSITIONS

Glenn A. Pearson, 1311 Delaware, SW., Washington, D.C. 20024

Continuation-in-part of Ser. No. 606,842, Aug. 22, 1975, abandoned. This application May 6, 1977, Ser. No. 794,548
Int. Cl.[2] C08L *61/24*
U.S. Cl. 260—29.4 R **9 Claims**

1. A resinous solution comprising the reaction product of (a) about 65–80 moles of formaldehyde, (b) about 20–30 moles of urea, and (c) about 15–25 moles of phosphoric acid, said solution being formed by initial mixing of said formaldehyde and said urea followed by the addition of said phosphoric acid, whereby upon addition of said phosphoric acid, an exothermic reaction occurs leading to a substantially immediate and complete exothermic reaction to form a viscous, syrupy, water-white, aqueous resinous solution, the solution being a stable solution having a good shelf life and forming flexible, waterproof and non-burning films.

4,119,599

CATHODIC ELECTROCOATING COMPOSITIONS CONTAINING ACID-FUNCTIONAL AMINOPLAST AND FLEXIBILIZED, EPOXY-FREE, AMINATED RESIN

James T. K. Woo, Medina, Ohio, and James M. Evans, Lynn Haven, Fla., assignors to SCM Corporation, Cleveland, Ohio

Division of Ser. No. 642,694, Dec. 22, 1975, Pat. No. 4,066,525. This application Jul. 5, 1977, Ser. No. 813,082
Int. Cl.[2] C08L *61/28*
U.S. Cl. 260—29.4 R **7 Claims**

1. A cathodic electrocoating composition comprising, in aqueous dispersion:

(a) a cathodically electrodepositable, at least partially cationized binder resin comprising a major proportion by weight of a reaction product of a 1,2-epoxide-functional resin and a monoamino alcohol having at least one reactive hydrogen on the amino nitrogen, said reaction product being substantially devoid of reactive epoxide groups and having an average of at least about two reactive hydroxyl groups and an average of at least about ½ directly or indirectly pendant 5 to 20 carbon atom hydrocarbon radical per molecule;

(b) from about 0.05 to about 1 weight parts, per weight part of said binder resin, of an acid-functional aminoplast resin (i) cathodically co-electrodepositable with said binder resin from said aqueous dispersion to form an intermediate product comprising an intimate mixture of the cathodically electrodeposited forms of said binder resin and said aminoplast resin, (ii) co-reactive in said intermediate product with the cathodically electrodeposited form of said binder resin, upon heating, to transform said intermediate product into a cured resinous product, (iii) having at least about 0.0001 equivalent of titratable acid functionality of pK_a not greater than about 5 per gram of said aminoplast resin, and (iv) not soluble in the aqueous medium of said dispersion, and

(c) from about 20 to about 150 milliequivalents, per 100 grams of (a) and (b), of an anion of a water-soluble acid to enhance and stabilize the cationization of said binder resin;

said aqueous dispersion having a pH of from about 2 to about 7 and being substantially free of any water-soluble acid which will be retained in water-soluble form in said cured resinous product and of anions thereof.

4,119,600

MIGRATION-RESISTANT BINDER COMPOSITIONS FOR BONDING NONWOVEN FIBERS; ALSO METHODS AND ARTICLES

Ronald D. Bakule, Jenkintown; R. A. Gill, Abington, and Lawrence K. Wempe, Landsale, all, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed May 17, 1976, Ser. No. 686,980
Int. Cl.[2] C08L *33/00*
U.S. Cl. 260—29.6 RW **24 Claims**

1. A composition adapted to form a bonded composite comprising nonwoven fibers having evenly distributed therewith a binder comprising:

(A) an anionically stabilized polymer latex;

(B) a water-soluble polymer of 20% to 100% by weight of mer units containing an amine group and having a viscosity average molecular weight between 5,000 and 300,000; and

(C) a volatile base;

the latex polymer and the water-soluble polymer each being a polymer of at least one ethylenically unsaturated monomer.

4,119,601

PULVERULENT COMPOSITIONS BASED ON VINYL CHLORIDE

Bernard Bonnaud, Sisteron, and Yves Fagnoni, Vienne, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 8, 1976, Ser. No. 748,517
Claims priority, application France, Dec. 11, 1975, 75 37921
Int. Cl.[2] C08L *27/06*
U.S. Cl. 260—29.6 R **15 Claims**

1. Method of preparing pulverulent polymer or copolymer compositions based on vinyl chloride and suitable for immediate use comprising preparing a master mixture of said polymers and/or copolymers based on vinyl chloride and additives employed therewith in use by mixing in an aqueous medium a fraction of the one or more of said polymers and/or copolymers and said additives in the form of liquid additives and/or fusible solid additives, the liquid additives and at least part of the fusible solid additives being introduced with agitation in the form of one or more dispersions of finely divided particles of a homogenous phase in water, and mixing the master mixture with the remainder of the polymer and/or copolymers based on vinyl chloride.

4,119,602

AQUEOUS URETHANE CODISPERSIONS

Irving E. Isgur, Framingham; Robert R. Alexander, Milford, and Thomas P. Moy, Brighton, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Apr. 7, 1977, Ser. No. 785,579
Int. Cl.[2] C08L *75/08*
U.S. Cl. 260—29.6 NR **22 Claims**

1. An anionically stabilized aqueous codispersion of a blocked urethane prepolymer and a synthetic polymer latex,

said codispersion having a solids loading not exceeding about 50%, said blocked prepolymer comprising the condensation product of a hydrophilic polyoxyalkylene urethane prepolymer with an oxime and having a decomposition temperature of from about 140° to about 180° C.; said synthetic polymer latex having a pH value of at least about 6 selected from the group consisting of (1) copolymeric latex of a vinyl carboxylic acid with at least one additional ethylenically polymerizable monomer selected from the group consisting of (a) vinyl aromatic hydrocarbons (b) vinyl aliphatic hydrocarbons, (c) derivatives of acrylic acid, and (d) vinyl chloride, (2) butadiene-acrylonitrile latex, (3) polystyrene latex, (4) vinylpyridine latex, (5) styrene-butadiene latex, and (6) acrylic latex, said urethane prepolymer being water-dispersible and the reaction product of a polyoxyalkylene polyol containing at least 50 mole percent ethylene oxide, a molecular weight between about 200 to 20,000 and a hydroxy functionality of from about 2 to 8 with an excess of a polyisocyanate; said blocked prepolymer having a NOH/NCO molar ratio of from about 0.65 to about 1.1, said blocked prepolymer being from about 5 to about 95% of the solids content of said codispersion with the balance of the solids being said synthetic polymer latex; said codispersion having a pH value adjusted to a value of at least about 9.

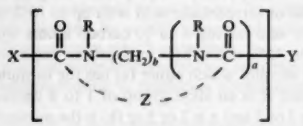
4,119,603

PLASTICIZED POLYCARBONATE COMPOSITION

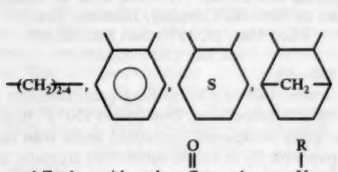
Fred Frank Holub, Schenectady, N.Y., and Phillip Steven Wilson, Mt. Vernon, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 16, 1976, Ser. No. 751,454
Int. Cl.[2] C08K *5/17, 5/20*
U.S. Cl. 260—32.6 R **9 Claims**

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of a nitrogen containing plasticizer of the following formula:



wherein X is selected from the group consisting of C_1 to C_{30} alkyl, aralkyl of 7 to 15 carbon atoms and substituted aralkyl wherein the substituents are hydroxy and C_1 to C_{30} alkyl, C_1 to C_{30} alkylene, hydroxy alkyl of 2 to 10 carbon atoms, thioalkyl of 1 to 10 carbon atoms and thioalkylene of 2 to 10 carbon atoms; Y is selected from the group consisting of hydrogen, C_1 to C_{30} alkyl, aralkyl of 7 to 15 carbon atoms and substituted aralkyl wherein the substituents are hydroxy and C_1 to C_{30} alkyl, C_1 to C_{30} alkylene, hydroxy alkyl of 2 to 10 carbon atoms, thioalkyl of 1 to 10 carbon atoms, thioalkylene of 2 to 10 carbon atoms; R is independently hydrogen or C_1 to C_{30} alkyl; *a* is an integer of 0 to 1 with the proviso that when *a* is 1, one of X or Y is other than alkyl; *b* is an integer of 0 to 20; Z is



group form a cyclic structure.

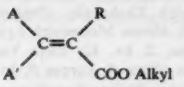
4,119,604

POLYVINYL ALCOHOL COMPOSITIONS FOR USE IN THE PREPARATION OF WATER-SOLUBLE FILMS

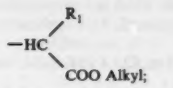
Robert David Wysong, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 715,237, Aug. 18, 1976, abandoned. This application Jul. 11, 1977, Ser. No. 813,961
Int. Cl.[2] C08K *5/06;* **C08L** *29/04*
U.S. Cl. 260—33.2 R **10 Claims**

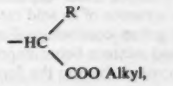
1. A composition suitable for use in the preparation of cold water-soluble films consisting essentially of (i) a resin mixture of 40 to 55 parts by weight of a low molecular weight polyvinyl alcohol containing acyl groups having 1 to 4 carbon atoms, and having a viscosity in the range between 3 and 10 cps and a degree of hydrolysis in the range between 85 and 90 mol percent; 25 to 60 parts by weight of a medium molecular weight polyvinyl alcohol containing acyl groups having 1 to 4 carbon atoms, and having a viscosity in the range between 10 and 35 cps and a degree of hydrolysis in the range between 85 and 90 mol percent; and 0 to 20 parts by weight of a copolymer made up of 90 to 98 weight percent polymerized vinyl alcohol units and 10 to 2 weight percent of polymerized ester units which in monomeric form have the formula:



wherein
A is H or $-CH_3$;
A′ is H or —COO Alkyl;
R is H, $-CH_3$ or



provided that when R is



both A and A′ are H;
R′ is H or $-CH_3$; and
Alkyl contains 1 to 4 carbon;
which copolymer has a viscosity in the range between 10 and 60 cps and a degree of hydrolysis in the range between 95 and 100 mol percent; and (ii) as a plasticizer, 10 to 30 parts by weight of a polyethylene glycol per 100 parts by weight of said resin mixture, said polyethylene glycol having an average molecular weight in the range between 285 and 420; for each of said polymers, the viscosity being determined by the Hoeppler Falling Ball Method ASTM-D 1343-56, Part 8 and the degree of hydrolysis being determined by saponification.

4,119,605

SOLUTIONS OF POLYESTER-IMIDES

John T. Keating, Clifton Park, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

Division of Ser. No. 770,310, Feb. 22, 1977. This application Oct. 28, 1977, Ser. No. 846,392
Int. Cl.[2] C08K *5/06*
U.S. Cl. 260—33.2 R **30 Claims**

1. A solution in a solvent comprising at least 40% of a glycol ether which is a monoalkyl ether of diethylene glycol having 1 to 4 carbon atoms, phenoxy ethanol or the monophenyl ether of ethylene glycol of a polyester-polyimide having a hydroxy to carboxyl ratio of 1.25:1 to 2:1, 96 to 50% ester groups, 5 to

50% imide groups, the polyimide being an imide of reactants comprising an aromatic diamine and trimellitic anhydride, the polyester being an ester of isophthalic acid or terephthalic acid or benzophenone dicarboxylic acid with up to 10% of an alkane dicarboxylic acid having 6 to 10 carbon atoms with alcohols wherein 5 to 45% of the hydroxyl groups are contributed by (I) an etheralcohol which either (a) has the formula

$$RO(C_nH_{2n}O)_xH$$

where R is an alkyl group of 1 to 4 carbon atoms or phenyl, n is 2 or 3 and x is 2 or 3 or (b) is the monophenyl ether of ethylene glycol, (II) at least 20% of the hydroxyl group are contributed by a trihydric alcohol which is tris(2-hydroxyethyl)cyanurate, glycerine, trimethylolpropane or trimethylolethane and (III) any balance of hydroxyl groups are contributed by a dihydric alcohol, said polyester-polyimide having a sufficiently low molecular weight that it is soluble in said solvent.

4,119,606

COLD-SETTING MOULDING MIXTURE FOR PRODUCING FOUNDRY MOULDS AND CORES

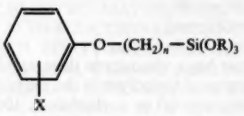
Sergei Dmitrievich Teplyakov, Seleznevskaya ulitsa, 13, kv. 3; Sergei Semenovich Zhukovsky, Profsojuznaya ulitsa, 17, korpus 1, kv. 15; Abram Moiseevich Lyass, Sharikopodshipnikovskaya ulitsa, 2, kv. 42; Zoya Vasilievna Belyakova, Nizhegorodskaya ulitsa, 7, korpus 3, kv. 14; Maiya Grigorievna Pomerantseva, Sadova-Spasskaya ulitsa, 19, kv. 6; Nina Yakovievna Tsygankova, ulitsa Marxa-Engelsa, 8, kv. 64, and Mira-Ljudmila Solomonovna Krol, Storozhevaya ulitsa 31, kv. 20, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 391,275, Aug. 24, 1973, abandoned, and a continuation-in-part of Ser. No. 557,525, Mar. 12, 1975, abandoned, which is a continuation of Ser. No. 458,982, Mar. 8, 1974, abandoned. This application Feb. 24, 1976, Ser. No. 660,937

Int. Cl.[2] C08K *5/54, 9/06*

U.S. Cl. 260—38 **6 Claims**

1. A cold-setting moulding mixture for producing foundry moulds and cores comprising essentially a refractory filler, a binder which is synthetic resin capable of setting at room temperature in the presence of an acid catalyst, an acid catalyst selected from the group consisting of mineral and aromatic sulphonic acids, said mixture being improved by adding to it phenoxyalkylalkoxysilane having the formula



wherein "X" is selected from the group consisting of hydrogen, alkyl-, alkoxy-group and a $—O(CH_2)_nSi(OR)_3$ group, "*n*" 2–3 and R is a C_1–C_4 alkyl radical.

4,119,607

MULTICOMPONENT POLYESTER- BLOCK COPOLYMER- POLYMER BLENDS

William P. Gergen, and Sol Davison, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 794,164, May 5, 1977, which is a continuation-in-part of Ser. No. 693,463, Jun. 7, 1976, abandoned. This application Mar. 7, 1978, Ser. No. 884,107

Int. Cl.[2] C08L *67/00;* **C08K** *7/14;* **C08L** *51/00*

U.S. Cl. 260—40 R **19 Claims**

1. A composition comprising the admixture obtained by intimately mixing about 4 to about 40 parts by weight of a block copolymer, about 5 to about 48 parts by weight of at least one dissimilar engineering thermoplastic, and a saturated thermoplastic polyester in a weight ratio of polyester to dissimilar engineering thermoplastic of greater than 1:1, so as to form a polyblend wherein at least two of the polymers have at least partial continuous interlocked networks with each other and wherein:

(a) said block copolymer comprises at least two monoalkenyl arene polymer end blocks A and at least one substantially completely hydrogenated conjugated diene polymer mid block B, said block copolymer having an 8 to 55 percent by weight monoalkenyl arene polymer block content, each polymer block A having an average molecular weight of between about 5,000 and about 125,000, and each polymer block B having an average molecular weight of between about 10,000 and about 300,000;

(b) said thermoplastic polyester has a molecular weight in excess of about 20,000, a generally crystalline structure, a melting point over about 120° C. and is selected from the group consisting of (i) the condensation product of a dicarboxylic acid and a glycol, (ii) polypivalolactone, and (iii) polycaprolactone; and

(c) said dissimilar engineering thermoplastic resin is capable of forming a continuous structure and is selected from the group consisting of polyamides, polyolefins, thermoplastic polyurethanes, halogenated thermoplastics, and nitrile barrier resins.

4,119,608

SOLUTIONS OF POLYESTER-IMIDES

John T. Keating, Clifton Park, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,310

Int. Cl.[2] C08G *73/16, 77/12*

U.S. Cl. 528—188 **25 Claims**

1. A polyester-polyimide having a hydroxy to carboxyl ratio of 1.25:1 to 2:1, 95 to 50% ester groups, 5 to 50% imide groups, the polyimide being an imide of reactants comprising a diamine and trimellitic anhydride, the polyester being an ester of isophthalic acid or terephthalic acid with up to 10% of an alkane dicarboxylic acid having 6 to 10 carbon atoms with alcohols wherein 5 to 45% of the hydroxyl groups are contributed by (I) an ether-alcohol which either (a) has the formula $RO(C_nH_{2n}O)_xH$ where R is an alkyl group of 1 to 6 carbon atoms or phenyl, *n* is 2 or 3 and *x* is 2 or 3 or (b) is the monophenyl ether of ethylene glycol, (II) at least 20% of the hydroxyl group are contributed by a trihydric alcohol and (III) any balance of hydroxyl groups are contributed by a dihydric alcohol, said polyester-polyimide having a sufficiently low molecular weight that it is soluble in a mono lower alkyl ether of diethylene glycol alone or in the monophenyl ether of diethylene glycol or phenoxyethanol or a mixture of said phenyl ethers.

4,119,609

CURABLE EPOXY-CARBOXYLIC ACID ADDUCTS

Roy A. Allen, and LeRoy W. Scott, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 28, 1977, Ser. No. 782,207

Int. Cl.[2] C08G *59/52*

U.S. Cl. 528—99 **7 Claims**

1. A curable, carboxyl-containing precondensate prepared by reacting at a temperature from about 150° F. to about 250° F. (1) an epoxy compound containing more than one vicinal epoxy group with (2) an amino-substituted aromatic carboxylic acid, said precondensate having a theoretical acid number of from about 30 to 90 and a weight per epoxy of from about 2400 to about 40,000.

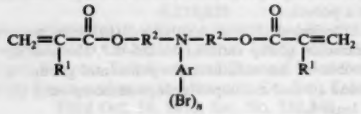
4,119,610

BROMINATED ACRYLATE DENTAL COMPOSITIONS

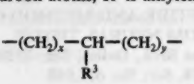
David H. Kaelble, Thousand Oaks, Calif., assignor to Arroyo Dental Products Co., La Canada, Calif.

Filed Apr. 25, 1977, Ser. No. 790,487
Int. Cl.[2] C08F *20/22*
U.S. Cl. 526—292 10 Claims

1. An ambient curing composition comprising a solution of a brominated diacrylate compound selected from compounds of the formula:



where n is an integer from 1 to 6, R^1 is hydrogen or alkyl of 1 to 6 carbon atoms, R^2 is alkylene of 1 to 5 carbon atoms or



where R^3 is hydrogen, alkyl of 1 to 4 carbon atoms or —OH and x and y are selected from 0 or an integer from 1 to 4 and Ar is an aromatic group; and

a reactive diluent selected from the group consisting of monoacrylates, diacrylates and triacrylates.

4,119,611

PROCESS FOR THE PRODUCTION OF LINEAR CONDENSATES OF PHENOL AND FORMALDEHYDE

Joachim Löbering, Grosshesselohe, Fed. Rep. of Germany, assignor to Zimmer Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 845,924
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650025
Int. Cl.[2] C08G *8/10*
U.S. Cl. 528—139 7 Claims

1. Process for producing linear phenol formaldehyde condensates characterized by a high degree of polymerization, purity and homogeneity which comprises

reacting in a first stage reaction phenol and formaldehyde at elevated temperature to produce a phenol-methylol product,

adjusting the pH of said phenol-methylol product to a value greater than 3,

adding in a second stage reaction said phenol-methylol product in aliquot portions to an additional quantity of molten phenol having a pH below 3, while maintaining the temperature below about 100° C,

raising stepwise the temperature of the mixture as the viscosity of the resulting condensate increases until there is no further increase in the viscosity of the condensate, and

extruding the viscous condensate.

4,119,612

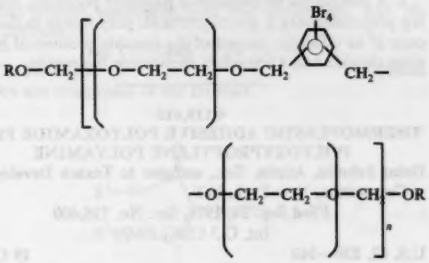
POLYMERIC AND OLIGOMERIC FORMALS

Norbert Vollkommer, Troisdorf; Gerhard Schade, Witten-Bommern; Egon Norbert Petersen, Neunkirchen-Seelscheid; Gerhard Bier, Troisdorf; Herbert Klinkenberg, Troisdorf-Eschmar, and Werner Schmidt, St. Augustin-Niederberg, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bez. Cologne, Germany

Filed Apr. 29, 1976, Ser. No. 681,672
Claims priority, application Fed. Rep. of Germany, May 2, 1975, 2519575; May 2, 1975, 2519576; Nov. 13, 1975, 2550909
Int. Cl.[2] C08G *4/00*
U.S. Cl. 528—232 43 Claims

1. In a process for preparing a polymeric formal having 2 to 200 repeating units wherein a dihydric alcohol is contacted with paraformaldehyde in the presence of a solvent and an acid catalyst, the improvement which comprises including in the reaction mixture at least one additional alcohol, or with, instead of paraformaldehyde and additional alcohol, the corresponding dialkyl formal.

26. A polymeric formal having the formula



wherein n is a positive integer from 2 to 200, R is an optionally substituted straight or branched chain alkyl radical having 3 to 8 carbon atoms, aryl or aralkyl radicals can be substituted on one or both sides by an alkyl or hydroxyalkyl.

4,119,613

PROCESS FOR THE PRODUCTION OF POLYISOCYANATE-POLYADDITION PRODUCTS USING A MULTI-PHASE REACTION FLOW TUBE

Artur Reischl, Leverkusen; Henning Klussmann, Rommerskirchen, and Eugen Velker, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 31, 1977, Ser. No. 829,383
Claims priority, application Fed. Rep. of Germany, May 4, 1977, 2719970
Int. Cl.[2] C08G *18/08*
U.S. Cl. 526—64 11 Claims

1. A continuous process for the production of polyisocyanate-polyaddition products by reacting starting reaction components (A) polyisocyanates with (B) compounds containing at least two isocyanate-reactive groups in the presence of a material selected from the group consisting of organic solvents or dispersants, inert carrier gases, and mixtures thereof, comprising

(1) introducing the liquid mixture of the starting reaction components, in the form of a solution or dispersion or with an inert carrier gas, into a coil flow tube having an internal diameter of from 3 to 100 mm, a ratio of tube diameter to tube length of from 1:100 to 1:3,000 and a ratio of tube diameter to coil diameter of from 1:5 to 1:100, the fall in pressure over the length of the reaction tube amounting to from 10 mbars to 100 bars, the quantitative ratios of starting reaction components, solvents or dispersants, and inert carrier gas being selected in such a way that the proportion of the total gas phase in the reaction tube amounting to from 10 to 90%, by weight, the rate of gas flow in the tube amounting to from 20 to 300 meters/second and the average residence time of the reacting starting components in the tube amounting to less than 5 minutes; directly dissipating the generated heat of reaction through the tube jacket which is coolable or heatable in sections, so that the reaction temperature is from 20° to 250° C.;

(2) removing the solid and/or liquid reaction product, and the inert carrier gas and/or vapor-formed solvent or dispersant at the end of the reaction tube.

4,119,614

PROCESS FOR MAKING POLYESTER POLYMER

Henry L. King, Cary, and Chester C. Wu, Raleigh, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1977, Ser. No. 863,287
Int. Cl.[2] C08G *63/22*
U.S. Cl. 528—283 **9 Claims**

1. A process for preparation of polyester polymers, comprising polycondensing a glycol phthalate prepolymer in the presence of an effective amount of the reaction product of germanium dioxide and a tetraalkyl ammonium hydroxide.

4,119,615

THERMOPLASTIC ADHESIVE POLYOXAMIDE FROM POLYOXYPROPYLENE POLYAMINE

Heinz Schulze, Austin, Tex., assignor to Texaco Development Corporation, New York, N.Y.

Filed Sep. 24, 1976, Ser. No. 726,400
Int. Cl.[2] C08G *69/26*
U.S. Cl. 528—343 **19 Claims**

1. A resinous polyoxamide thermoplastic adhesive formed by reacting one mole of a polyoxypropylene polyamine selected from the group consisting of diamines, triamines and mixtures thereof, and having an average molecular weight of about 190 to about 3,000 with 1–4 moles of oxalic acid or a lower alkyl mono or diester of oxalic acid to form a liquid prepolymer, 1 mole of said prepolymer being further reacted with 0.5–1.5 mole of a diamine having the formula:

$$NH_2 - R - HN_2$$

where R is a divalent hydrocarbon radical containing 2–18 carbon atoms to form said resinous polyoxamide.

4,119,616

PROCESS FOR SULFONATING UNSATURATED ELASTOMERS USING ACYL SULFATES

Charles P. O'Farrell, Clark, and George E. Serniuk, Roselle, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 441,435, Feb. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 239,307, Mar. 29, 1972, Pat. No. 3,836,511, which is a continuation-in-part of Ser. No. 123,908, Mar. 12, 1972, abandoned. This application Sep. 30, 1974, Ser. No. 510,392
The portion of the term of this patent subsequent to Sep. 17, 1991, has been disclaimed.
Int. Cl.[2] C08F *8/36*
U.S. Cl. 526—31 **8 Claims**

1. In a process for preparing a sulfonic acid ionomer of an olefinically unsaturated elastomer wherein said elastomer is an EPDM, the improvement which comprises using as a sulfonating agent acetyl sulfate, propionyl sulfate or butyryl sulfate, and sulfonating said EPDM until said EPDM contains 0.08 mole % to 15 mole % SO_3H.

4,119,617

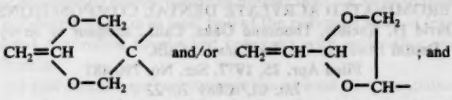
CURABLE RESINOUS COMPOSITION COMPRISING AN UNSATURATED CYCLOACETAL COMPOUND AND A POLYTHIOL COMPOUND

Toshiaki Hanyuda, Yokohama; Haruyuki Kanehiro, Kawasaki; Kojiro Mori, Tokyo, and Eiichiro Takiyama, Kamakura, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1977, Ser. No. 819,751
Claims priority, application Japan, Jul. 28, 1976, 51-89048
Int. Cl.[2] C08F *28/06*
U.S. Cl. 528—360 **6 Claims**

1. A resinous composition curable to an insoluble and infusible resin, which comprises:

(i) a compound having at least 2 unsaturated cycloacetal groups per molecule, expressed by the formula



(ii) a compound selected from the group consisting of dipentene dimercaptane, ethylcyclohexyl dimercaptane, 1,6-hexane dimercaptane, and an ester product of thioglycolic acid, β-mercaptopropionic acid or mercaptosuccinic acid with a polyol,

said compound (i) and compound (ii) being mixed in a functional group ratio of 1 : 0.5–1.7, the average total number of the unsaturated cycloacetal groups in compound (i) and mercapto groups in compound (ii) being at least 5.

4,119,618

VASOACTIVE POLYPEPTIDE AND METHOD OF PREPARATION FROM NEURAL TISSUE

Sami I. Said, 5323 Harry Hines Blvd., Dallas, Tex. 75235

Filed Apr. 28, 1976, Ser. No. 681,045
Int. Cl.[2] C07C *103/52*; C07G *7/00*
U.S. Cl. 260—112 R **9 Claims**

1. A process for the isolation of a new biologically active polypeptide from the neural tissue of mammals which consists essentially of the sequential steps of:

(a) obtaining neural tissue;

(b) extracting said neural tissue by contacting with a member selected from the group consisting of dilute organic acyclic carboxylic acids and mixtures of organic acyclic carboxylic acids with lower alkyl alcohols;

(c) concentrating the resultant extract by contacting with alginic acid, filtering the resultant alginic acid containing the absorbed extract, and collecting the alginic acid containing the absorbed extract on the filter;

(d) eluting the alginic acid containing the absorbed extract by contacting with HCl aqueous solution and recovering the extract from the HCl solution;

(e) subjecting the resultant extract to gel chromatography in a chromatographic column and recovering the active fraction;

(f) subjecting the resulting active fraction from step (e) to at least two consecutive ion exchange chromatographic steps in a chromatographic column and recovering the active fraction therefrom;

(g) subjecting the active fractions to countercurrent distribution; and

(h) subjecting the resultant active fraction to lyophilization and recovering the active fraction containing the polypeptide.

4,119,619

EMULSIFICATION METHOD FOR THE PROCESSING OF KRIEL TO PRODUCE PROTEIN, LIPIDS AND CHITIN

Sergei Vasilievich Rogozhin, ulitsa Vavilova, 55/5, kv. 20; Efim Semenovich Vainerman, ulitsa Profsojuznaya, 94/20, kv. 53; Ljubov Mikhailovna Burmistrova, ulitsa Preobrazhensky val, 16, kv. 44; Jury Alexandrovich Davidovich, ulitsa Krasny Kazanets, 19, korpus 2, kv. 131; Vladimir Jurievich Ryashentsev, ulitsa Musy Dzhalilya, 34, korpus 2, kv. 230; Valentina Kirillovna Kulakova, ulitsa Kedrova, 13, korpus 2, kv. 72; Lev Lvovich Lagunov, ulitsa Trifonovskaya, 47a, kv. 47, and Vladimir Petrovich Bykov, ulitsa Chertanovskaya, 1a, korpus 1, kv. 84, all of Moscow, U.S.S.R.

Filed Dec. 8, 1977, Ser. No. 858,801
Claims priority, application U.S.S.R., Dec. 16, 1976, 2432584
Int. Cl.[2] A23J *1/04*; A23K *1/10*
U.S. Cl. 260—112 R **3 Claims**

1. A method for the processing of kriel to produce protein,

lipids and chitin which comprises emulsification of lipids of kriel in an aqueous medium; separation of the resultant emulsion of lipids from the kriel mass; alkaline extraction of proteins from the kriel mass at a pH of 10 to 12; separation of the alkaline extract of proteins from chitin integuments; separation of protein from the alkaline extract.

4,119,620

NOVEL DIPEPTIDE DERIVATIVES, SALTS THEREOF, AND METHOD OF MEASURING ENZYME ACTIVITY

Toshiharu Nagatsu, Yokohama, and Shumpei Sakakibara, Suita, both of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Oct. 18, 1976, Ser. No. 733,343

Claims priority, application Japan, Oct. 30, 1975, 50/130809

Int. Cl.[2] C07C *103/52;* B41J *5/12*

U.S. Cl. 260—112.5 R **10 Claims**

1. Dipeptide derivatives having the structure:

X-L-proline-Y

wherein X is a residue of an amino acid selected from the group consisting of glycine, alanine, valine, leucine, serine, threonine, phenylalanine, tyrosine, tryptophane, glutamic acid, aspartic acid, lysine and arginine; and Y is a residue of a compound selected from the group consisting of p-nitroaniline, p-phenylazoaniline, and 4-phenylazo-1-naphthylamine; and acid salts of said dipeptide derivatives.

4,119,621

AZO DYES HAVING A BENZOISOTHIAZOLYL DIAZO COMPONENT

Guenter Hansen; Hermann Kaack, and Norbert Grund, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

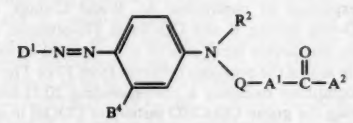
Filed Feb. 9, 1976, Ser. No. 656,390

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1975, 2507460

Int. Cl.[2] C09B *29/08, 29/26;* D06P *3/36, 3/54*

U.S. Cl. 260—158 **8 Claims**

1. A dye having the formula



in which:

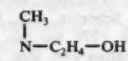
D^1 is 5-nitrobenzoisothiazolyl-(2,1), or 5-cyano-7-nitrobenzoisothiazolyl-(1,2);

B^4 is hydrogen or methyl;

R^2 is C_1 to C_4 alkyl, C_1 to C_4 alkoxyethyl, β-cyanoethyl or β-hydroxyethyl;

A^1 is a direct bond, —NH— or —O—;

A^2 is NH—(C_1 to C_4)-alkyl, NH—C_2H_4OH, NH—C_3H_6OH, or



or, when A^1 is —NH— or —O—, is OCH_3, OC_2H_5 or OC_2H_4OH; and

Q is $—C_2H_4—$, $—C_3H_6—$ or $—C_4H_8—$.

4,119,622

PYRAZOLONYLAZOANILINE OR AMINONAPHTYL COMPOUNDS FOR COPYING PROCESSES

Hans Baumann, Wachenheim, and Andreas Oberlinner, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

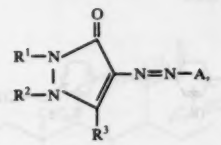
Filed Nov. 1, 1976, Ser. No. 737,720

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1975, 2557686

Int. Cl.[2] C09B *29/06, 29/08*

U.S. Cl. 260—162 **10 Claims**

1. An azo compound of the formula:

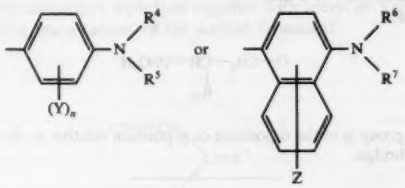


where

R^1 is hydrogen or alkyl of 1 to 4 carbon atoms,

R^2 and R^3 are each alkyl of 1 to 4 carbon atoms, or one of the radicals R^1, R^2, and R^3 is unsubstituted phenyl or phenyl substituted by alkyl of 1 to 4 carbon atoms, methoxy or ethoxy, and

A denotes



where R^4 and R^5 are each hydrogen; alkyl of 1 to 8 carbon atoms; hydroxyalkyl of 2 or 3 carbon atoms; alkoxyalkyl of 3 to 8 carbon atoms; cyanoethyl; alkylcarbonyloxyalkyl of a total of 4 to 10 carbon atoms; alkylcarbonyl with 1 to 3 carbon atoms in the alkyl; cyclohexyl; phenalkyl of 7 to 10 carbon atoms; or unsubstituted phenyl or phenyl substituted by alkyl of 1 to 4 carbon atoms, methoxy or ethoxy; or R^4 is N, N-dialkylaminoalkyl of a total of 4 to 11 carbon atoms of N, N-bisphenylalkylaminoalkyl having 7 to 10 carbon atoms per phenylalkyl and 2 or 3 carbon atoms in the aminoalkyl; or the group

is a 5-membered or 6-membered saturated heterocyclic ring selected from the group consisting of piperidine, morpholine, thiomorpholine and pyrrolidine, and

Y is hydroxy, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, chlorine, bromine or alkylcarbonylamino of a total of 2 to 4carbon atoms,

n is 0, 1 or 2,

R^6 and R^7 are each hydrogen, alkyl of 1 to 4 carbon atoms, cyclohexyl or unsubstituted phenyl or phenyl substituted by alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and Z is hydrogen, hydroxy, methoxy, methoxy or hydroxysulfonyl.

4,119,623
WATER-SOLUBLE DIPHENYLAMINE-AZO-SULFATOALKOXYPHENYL DYESTUFFS

Herbert Hugl; Hans-Günter Otten; Richard Sommer, and Gerhard Wolfrum, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

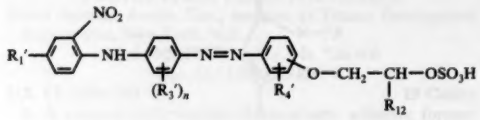
Filed Aug. 12, 1976, Ser. No. 713,820

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1975, 2536489; Dec. 19, 1975, 2557504

Int. Cl.[2] C09B *43/00*

U.S. Cl. 260—206 **3 Claims**

1. Azo dyestuff which, in the form of the free acid, corresponds to the formula



wherein

R_1' represents H, SO_2—R_7', nitro, $SO_2NR_8'R_9'$ or SO_2OR_{10}',

R_3' represents halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or $SO_2NR_8'R_9'$,

R_4' represents hydrogen, C_1–C_4-alkyl or phenyl,

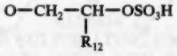
R_7' and R_{10}' represent C_1–C_4-alkyl, phenyl or benzyl,

R_8' and R_9' represent C_1–C_4-alkyl, phenyl, benzyl or phenethyl and

R_{12} represents hydrogen, methyl or ethyl,

n denotes 1 or 2 and

the



group is in the o-position or p-position relative to the azo bridge.

4,119,624
DISPERSE MONOAZO DYESTUFFS

Violet Boyd; Brian Ribbons Fishwick, and David John Watson, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

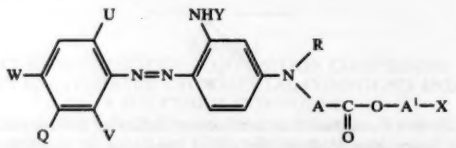
Continuation of Ser. No. 363,319, May 24, 1973, abandoned. This application Apr. 11, 1975, Ser. No. 567,404

Claims priority, application United Kingdom, Jun. 8, 1972, 26808/72

Int. Cl.[2] C09B *29/08*

U.S. Cl. 260—207.1 **3 Claims**

1. A disperse monoazo dyestuff, free from carboxylic acid and sulphonic acid groups, which is of the formula:



wherein U is selected from hydrogen, chlorine, bromine, cyano, lower alkyl, lower alkoxy, lower alkoxycarbonyl, lower alkylsulphonyl and —$CONT^1T^2$ wherein T^1 is selected from hydrogen and lower alkyl and T^2 from hydrogen, lower alkyl and phenyl;

V is selected from hydrogen, chlorine, bromine, cyano and lower alkoxycarbonyl;

Q is selected from hydrogen, chlorine, bromine, lower alkoxy and lower alkoxycarbonyl;

W is selected from hydrogen, nitro, chlorine, bromine, cyano, thiocyano, lower alkylsulphonyl, lower alkoxycarbonyl or —$SO_2NT^1T^2$ wherein T^1 is selected from hydrogen and lower alkyl, and T^2 from hydrogen, lower alkyl and phenyl;

R is cyano lower alkyl;

A and A^1 are each independently lower alkylene;

Y is selected from loweralkylcarbonyl, lower alkoxycarbonyl, benzoyl, lower alkylsulphonyl, penzenesulphonyl, aminocarbonyl and N-lower alkylaminocarbonyl; and

X is selected from lower alkoxy, lower alkoxy lower alkoxy, lower alkoxy lower alkoxy lower alkoxy, cyano, phenoxy, chlorine, bromine, lower alkoxycarbonyl, phenoxycarbonyl, benzoyl and lower alkylcarbonyl.

4,119,625
PROCESS FOR THE MANUFACTURE OF STEROID CARBOXYLIC ACIDS AND THE ESTERS THEREOF

Julius Schmidlin, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

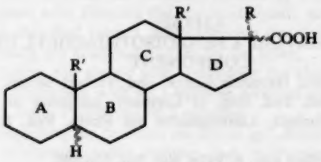
Filed Apr. 8, 1977, Ser. No. 785,997

Claims priority, application Switzerland, Apr. 15, 1976, 4848/76

Int. Cl.[2] C07J *71/00*

U.S. Cl. 260—239.55 D **13 Claims**

1. A process for the manufacture of steroid carboxylic acids selected from the group consisting of those having the formula I



(I)

wherein R represents a hydrogen atom, an unsubstituted or substituted hydrocarbon radical, or a free or conventionally esteritied or etheritied hydroxyl group, and wherein the carboxyl group and the 5H-atom can be in the alpha or beta position, R ' represents hydrogen or methyl, and its derivatives having expanded or contracted A-, B-and C-rings, an expanded D-ring having R and COOH in 17*a*-position, one or more than one double bond and/or conventional steroid-substituents in any of the positions different from 17 or 17*a;* which process comprises oxidising a corresponding 20,21-ketoaldehyde having the group CO-CHO instead of COOH in said 17- or 17*a*-positions, wih an organic peracid in an inert solvent.

4,119,626
DEPOT STEROID ESTERS

Paul-Eberhard Schülze; Ulrich Speck; Dieter Bittler; Rudolf Wiechert, and Bernard Acksteiner, all of Berlin, Fed. Rep. of Germany, assignors to Schering, A.G., Fed. Rep. of Germany

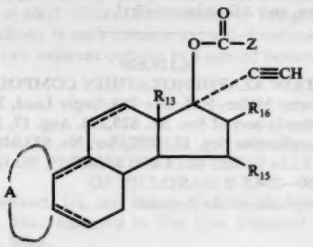
Filed Dec. 8, 1976, Ser. No. 748,411

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2558076

Int. Cl.[2] C07J *21/00*

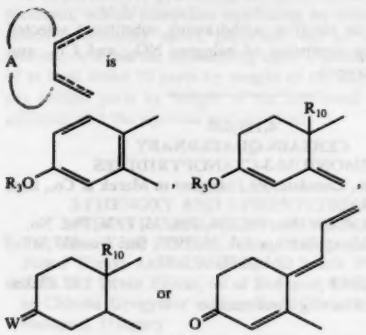
U.S. Cl. 260—239.55 C **37 Claims**

1. A depot steroid ester of the formula,



wherein

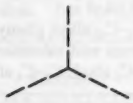
R_{13} is alkyl of 1–3 carbon atoms; each are a single or double bond;



R_{10} is hydrogen or methyl;

R_3 is hydrogen, alkanoyl of up to 4 carbon atoms, alkylsulfonyl of up to 4 carbon atoms, alkyl of up to 4 carbon atoms, or cycloalkyl of 3–8 carbon atoms;

W is H_2, O, or H, OR_3;



is a double bond in the 4,5- , 5,6-, or 5,10-position;

R_{15} and R_{16} each are hydrogen or collectively are α- or β-methylene or an additional carbon-carbon bond between the carbon atoms at the 15- and 16-position;

Z is alkenyl of up to 4 carbon atoms, X—OH, Y—CO—OH, X—O—CO—Y—CO—OH, X—O—CO—R, Y—CO—OR, X—O—CO—Y—CO—OR, or X—O—SO_2—R;

X is a straight-chain or branched alkylene, oxaalkylene or thiaalkylene of 1–6 carbon atoms, unsubstituted or substituted by —OH, —O—CO—R, or —O—SO_2—R;

Y is a direct bond, a straight-chain or branched alkylene, oxaalkylene or thiaalkylene of 1–3 carbon atoms when Y is linked at the 17-position of the steroid residue via —O—CO—; alkylene, oxaalkylene or thioalkylene of 1–16 carbon atoms, unsubstituted or substituted by an —OH, —OCOR, or —OSO_2R, when Y is linked to X via —O—CO—; or 1,4-phenylene, 1,4-cyclohexylene or 1,3-cyclopentylene substituted by up to two alkyl of 1–2 carbon atoms; and

R is alkyl or oxaalkyl of up to 22 carbon atoms.

5. 17α-Ethynyl-3,3-(2,2-dimethyltrimethylenedioxy)-17β-glycoloyloxy-18-methyl-5- and -5(10)-estrene, a compound of claim 1.

4,119,627

PROCESS FOR THE MANUFACTURE OF 6β,7-METHYLENE-3-OXO-4-ENE STEROIDS

Peter Wieland, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

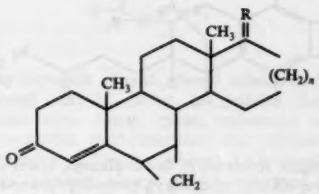
Filed Mar. 29, 1977, Ser. No. 782,585

Claims priority, application Switzerland, Apr. 6, 1976, 4299/76

Int. Cl.[2] C07J 71/00

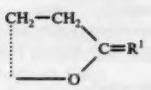
U.S. Cl. 260—239.57 20 Claims

1. Process for the manufacture of a 6 beta, 7-methylene-3-oxo-4-ene steroid of the general formula



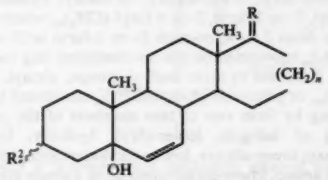
(I)

in which *n* denotes the number 1 to 2 and R represents a member selected from the group consisting of free oxo, ketalised oxo, free, etherified or esterified hydroxyl together with hydrogen, acetyl, hydroxyacetyl or a lower aliphatic hydrocarbon radical, beta-oriented hydroxyl together with y-di-lower alkylaminopropyl, hydrogen together with acetyl or hydroxyacetyl, and a radical, of the partical formula II



(II)

in which R^1 is two hydrogens, oxo, or lower alkoxy together with hydrogen, in which process, in consecutive steps, a compound of the formula III



(III)

in which *n* and R have the abovementioned meanings and R^2 represents alpha-oriented or beta-oriented hydroxyl, such hydroxyl etherified by an easily detachable protective group, or such hydroxyl esterified by a carboxylic acid, (a) is reacted with a zinc/copper-methylene iodide reagent, (b) the 3-hydroxyl group in a 6beta,7-methylene-3ξ,5-diol, if present in an etherified or esterified form, is liberated by hydrolysis, (c) the resulting 6beta,7-methylene-3ξ,5beta-diol is treated with an oxidising agent in order to dehydrogenate the 3-hydroxyl group to a 3-oxo group and (d) the resulting 6beta,7-methylene-5beta-hydroxy-3-oxo compound is treated with a dehydrating agent in order to split off the 5beta-hydroxyl group with formation of a 4,5-double bond.

4,119,628

PROCESS FOR PREPARING HEXAHYDRO-11 (EQ)-$CH_2CH_2COR_5$-2,6-METHANO-3-BENZAZOCINES

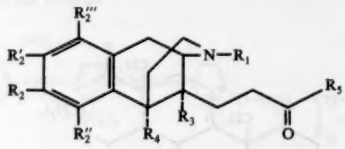
Thomas R. Lewis, Bethlehem, and William F. Michne, Poestenkill, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 785,746, Apr. 8, 1977, abandoned, which is a division of Ser. No. 725,371, Sep. 22, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,713

Int. Cl.² C07D *221/26*

U.S. Cl. 260—293.54 **26 Claims**

1. The process for preparing a compound having the formula



where:

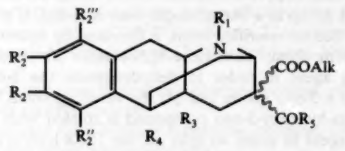
R_1 is hydrogen, lower-alkyl, lower-alkenyl, lower-alkynyl, halo-lower-alkenyl, cycloalkyl, cycloalkyl-lower-alkyl, 2- or 3-furylmethyl, or such 2- or 3-furylmethyl substituted on the unsubstituted ring carbon atoms by from one to three methyl groups, phenyl-lower-alkyl, or phenyl-lower-alkyl substituted in the phenyl ring by from one to two members of the group consisting of halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkyl-mercapto, trifluoromethyl, amino, lower-alkanoylamino or a single methylenedioxy attached to adjacent carbon atoms;

R_2, R_2', R_2'' and R_2''' are each hydrogen, or three of them are hydrogen and the fourth is halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkylmercapto, trifluoromethyl, nitro, amino, lower-alkanoylamino, lower-alkoxy-carbonylamino or phenyl, or two of the adjacent such groups together are methylenedioxy;

R_3 is hydrogen or lower-alkyl;

R_4 is hydrogen, lower-alkyl, lower-alkoxy-lower-alkyl, hydroxy-lower-alkyl, lower-alkylthio-lower-alkyl, lower-alkyl-sulfinyl-lower-alkyl, phenylthio-lower-alkyl, phenylsulfinyl-lower-alkyl, lower-alkenyl or halo-lower-alkyl, or R_3 and R_4 together are divalent lower-alkylene, $-(CH_2)_n-$, where n is one of the integers 3 or 4;

R_5 is lower-alkyl, lower-alkylthio-lower-alkyl, lower-alkoxy-lower-alkyl, lower-alkoxy, cycloalkyl, cycloalkyl-lower-alkyl, 2- or 3-furyl, 2- or 3-furyl-$(CH_2)_m$, where m is an integer from 2 to 4, or such 2- or 3-furyl or 2- or 3-furyl-$(CH_2)_m$ substituted on the unsubstituted ring carbon atoms by from one to three methyl groups, phenyl, phenyl-$(CH_2)_m$, or phenyl or phenyl-$(CH_2)_m$ substituted in the phenyl ring by from one to two members of the group consisting of halogen, lower-alkyl, hydroxy, lower-alkanoyloxy, lower-alkoxy, lower-alkyl-mercapto, trifluoromethyl, amino, lower-alkanoylamino or a single methylenedioxy attached to adjacent carbon atoms which comprises heating, with formic acid in an inert organic solvent or with a benzyl-di-lower-alkylammonium formate or a tri-lower-alkylammonium formate, a compound having the formula



where R_1, R_2, R_2', R_2'', R_2''', R_3, R_4 and R_5 have the meanings given above, and Alk is lower-alkyl.

4,119,629

CERTAIN AZAPHENOXATHIIN COMPOUNDS

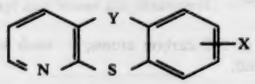
Richard Foster Miller, P.O. Box 743, Sugar Land, Tex. 77478

Continuation-in-part of Ser. No. 825,273, Aug. 17, 1977. This application Sep. 14, 1977, Ser. No. 833,049

Int. Cl.² C07D *521/00*

U.S. Cl. 260—294.8 B **7 Claims**

1. A compound of the formula:



wherein X is an electron withdrawing substituent selected from the group consisting of halogen, NO_2, and CF_3, and wherein Y is oxygen.

4,119,630

CERTAIN QUATERNARY AMMONIUM-3-CYANOPYRIDINES

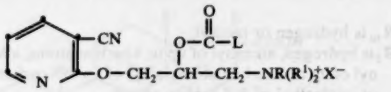
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 696,236, Jun. 15, 1976, Pat. No. 4,053,605. This application Jul. 20, 1977, Ser. No. 817,317

Int. Cl.² C07D *213/57*

U.S. Cl. 260—294.9 **11 Claims**

1. Compound having the formula:



wherein

R^1 is C_1–C_4 alkyl or benzyl,

R is C_3–C_4 branched alkyl and

L is selected from C_1–C_{10} alkyl, phenyl, mono- and disubstituted phenyl wherein said substituents are independently selected from C_1–C_4 alkyl, C_1–C_4 alkoxy and halo.

4,119,631

PENICILLINS AND THEIR PREPARATION

Rudolf Gottschlich; Werner Rogalski; Rolf Bergmann; Rosmarie Steinigeweg, and Helmut Wahlig, all of Darmstadt, Fed. Rep. of Germany, assignors to E. MERCK, Patentabteilung, Fed. Rep. of Germany

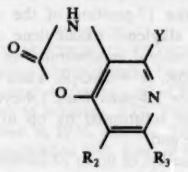
Division of Ser. No. 624,763, Oct. 22, 1975, Pat. No. 4,031,230. This application Feb. 2, 1977, Ser. No. 764,786

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1974, 2450668; Aug. 9, 1975, 2535655

Int. Cl.² C07D *233/06*

U.S. Cl. 260—295 A **3 Claims**

1. A carbamic acid lactone of the formula



wherein Y is H or alkyl of 1–4 carbon atoms and R_2 and R_3 collectively with the carbon atoms to which they are attached

form a first pyridine ring which is unsubstituted, substituted by up to two of alkyl, alkoxy, dialkylamino or halogen, wherein alkyl and alkoxy in each instance are of 1–4 carbon atoms, or is fused at two adjacent carbons to a second benzene or pyridine ring.

4,119,632

METHOD OF PROMOTING THE CRYSTALLIZATION OF PICLORAM

John J. Newport, III, and Bobby G. Messick, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 2, 1977, Ser. No. 773,574

Int. Cl.[2] C07D *213/79*; B01J *17/02*; B01D *21/01, 9/02*

U.S. Cl. 260—295 R **7 Claims**

1. A method for promoting the spherical crystallization of picloram, which comprises combining an anionic polyacrylamide flocculating agent, picloram, and an aqueous acidic medium, wherein the flocculating agent is present in an amount of at least about 10 parts by weight of the flocculating agent per million parts by weight of the combined weight of the picloram and the aqueous acid medium.

4,119,633

2-PHENOXY AND 2-PHENYLTHIO AND 2-PHENYLAMINO-ALKYL-2-OXAZOLINES

István Tibor Tóth; Pál Bite; György Magyar; Eszter Diszler; József Borsy; Andrea Maderspach; István Polgári; Sándor Elek, and István Elekes, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

Continuation-in-part of Ser. No. 406,784, Oct. 16, 1973, Pat. No. 3,979,405. This application Aug. 17, 1976, Ser. No. 715,051

Claims priority, application Hungary, Oct. 20, 1972, GO 1222

The portion of the term of this patent subsequent to Sep. 7, 1993, has been disclaimed.

Int. Cl.[2] C07D *263/14*

U.S. Cl. 260—307 F **1 Claim**

1. 2-[4'-(4''-Chlorophenyl)-phenoxy]-isopropyl-4-ethyl-4-hydroxy-methyl-oxazoline.

4,119,634

BIS-BENZOXAZOLYL-COMPOUNDS

Josef Schroeder, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

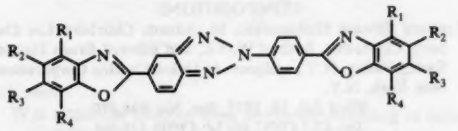
Filed Aug. 9, 1977, Ser. No. 823,133

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1976, 2636090

Int. Cl.[2] C07D *263/62*

U.S. Cl. 260—307 D **2 Claims**

1. A bis-benzoxazolyl compound of the formula



wherein

R_1, R_2, R_3 and R_4 independently of one another are hydrogen; halogen; C_1–C_8-alkyl; C_1–C_4-alkoxy; phenyl; phenyl-C_1–C_4-alkyl; carboxyl; cyano; C_1–C_4-alkoxycarbonyl; C_1–C_4-alkylsulfonyl; carboxamide, or carboxamide substituted by C_1–C_4-alkyl, phenyl or phenyl-C_1–C_4-alkyl; or two adjacent radicals R_1–R_4 taken together with the carbon atoms to which they are attached represent a benzene, cyclohexene or 3,3,5,5-tetramethylcyclopentene ring.

4,119,635

SUBSTITUTED 1,2,4-TRIAZOLE DERIVATIVES

Amedeo Omodei-Sale; Giorgio Pifferi; Pietro Consonni; Alberto Diena, all of Milan, and Bonaccorso Rosselli del Turco, Sarono (Varese), all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

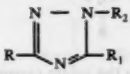
Continuation-in-part of Ser. No. 272,105, Jul. 17, 1978, abandoned. This application Sep. 3, 1976, Ser. No. 720,479

Claims priority, application Italy, Jul. 22, 1971, 42964 A/71

Int. Cl.[2] C07D *249/08*

U.S. Cl. 260—308 R **7 Claims**

1. A compound of formula



I

wherein

R may represent: phenyl; phenyl substituted by a radical selected from (C_{1-4})alkyl, (C_{1-4})alkoxy, fluoro, chloro, bromo, nitro, amino, cyano, carbamoyl, carboxy, hydroxymethyl, methylenedioxy and trifluoromethyl; dichlorophenyl; dimethoxyphenyl; 3,4,5-trimethoxyphenyl;

R_1 may represent: phenyl; phenyl substituted by a radical selected from (C_{1-4})alkyl, (C_{1-4})alkoxy, fluoro, chloro, bromo, hydroxymethyl, (C_{2-4})alkanoyloxymethyl, carbamoyloxymethyl, bromomethyl and dimethylaminomethyl; dimethylphenyl; dimethoxyphenyl; phenyl substituted by o-hydroxymethyl and chloro;

R_2 represents a (C_{1-4})alkyl group;

with the proviso that R and R_1 cannot simultaneously represent phenyl;

with the further proviso that, when R is phenyl, R_1 cannot be p-chlorophenyl.

4,119,636

PREPARATION OF ACYCLIC AND ALICYCLIC N-SUBSTITUTED HALO-2-PYRROLIDINONES

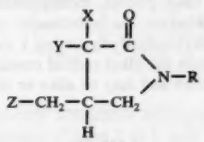
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 647,962, Jan. 9, 1976, and a continuation-in-part of Ser. No. 563,280, Mar. 28, 1975, abandoned. This application Aug. 31, 1977, Ser. No. 829,396

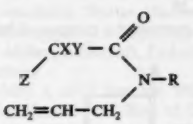
Int. Cl.[2] C07D *207/38*

U.S. Cl. 260—326.5 FL **6 Claims**

1. The method of preparing acyclic and alicyclic N-substituted halo-2-pyrrolidinones of the formula



in which R is lower alkyl, haloalkyl, alkenyl, cycloalkyl, cycloalkylalkyl, benzyl and chlorobenzyl; X is hydrogen or chlorine; Y is chlorine or bromine, and Z is chlorine or bromine; which comprises the steps of heating an N-alkenyl halomethyl amide of the formula



in which R, X, Y and Z are as above-defined, in the presence of a catalytic amount of ferrous ion and recovery of the resulting product.

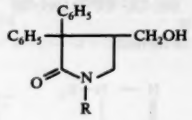
4,119,637

4-HYDROXYMETHYL-2-PYRROLIDINONES

Albert Duncan Cale, Jr., Mechanicsville, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Sep. 23, 1975, Ser. No. 615,951
Int. Cl.[2] C07D *207/26*
U.S. Cl. 260—326.5 FL **9 Claims**

1. A compound selected from those having the formula



wherein R is selected from the group consisting of lower alkyl having one to six carbon atoms, lower cycloalkyl having four to eight carbon atoms, or phenyllower alkyl consisting of benzyl, phenethyl, phenpropyl and α-methylbenzyl.

5. A process for the production of a 1-hydrocarbon-3,3-diphenyl-4-hydroxymethyl-2-pyrrolidinone which comprises mixing a 4,5-dihydro-3,3-diphenyl-4-hydrocarbylaminomethylfuran-2(3H)one with a catalytic amount of a strong base.

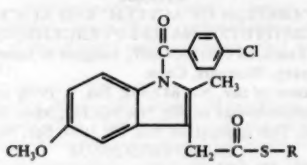
4,119,638

THIO-ESTER OF 1 (P-CHLOROBENZOYL)-5-METHOXY-2-METHYLINDOLE-3-ACETIC ACID

Richard E. Ray, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Nov. 29, 1976, Ser. No. 745,745
Int. Cl.[2] C07D *209/04*
U.S. Cl. 260—326.12 A **14 Claims**

1. A compound of the formula wherein R is



cycloalkyl radical containing 3 to 6 carbon atoms which can be optionally substituted by an alkyl radical containing 1 to 9 carbon atoms or halo; phenyl, monosubstituted or polysubstituted phenyl wherein the substituent can be linear or branched chain alkyl radical containing 1 to 9 carbon atoms, halo, alkoxy wherein the alkyl radical contains 1 to 9 carbon atoms, amino or nitro and may be alike or different.

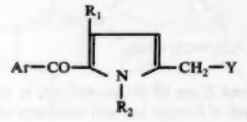
4,119,639

PREPARATION OF 5-AROYLPYRROLE-2-ACETIC ACID DERIVATIVES

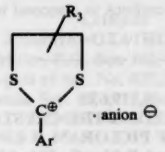
John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Incorporated, Ft. Washington, Pa.

Filed Jun. 27, 1977, Ser. No. 809,956
Int. Cl.[2] C07D *207/32, 207/34*
U.S. Cl. 260—326.35 **5 Claims**

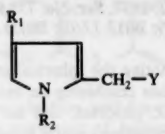
1. A method of preparing a compound having the formula:


(I)

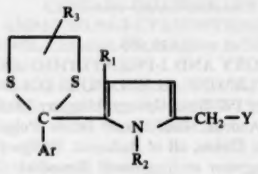
which comprises reacting a 2-Ar-1,3-dithiolanium salt having the formula:


(II-a)

with a compound having the formula:


(III).

in an inert organic solvent at a temperature from about −70° C. to about 25° C. to yield a compound having the formula:


(IV)

and subsequently hydrolyzing (IV) to yield the compound of formula (I) by treatment of (IV) with methyl iodide or dimethyl sulfate in an aqueous lower alkanolic solvent or by treatment of (IV) with alkali in aqueous or aqueous alkanolic solution at 70°–180° C., wherein the foregoing formulas:

R_1 is a member selected from the group consisting of hydrogen, chloro and bromo;

R_2 is a member selected from the group consisting of hydrogen and loweralkyl;

R_3 is a member selected from the group consisting of hydrogen and loweralkyl;

Y is a member selected from the group consisting of CN, COOH and COO-loweralkyl; and

Ar is a member selected from the group consisting of phenyl, thienyl, trifluoromethylphenyl, methylthiophenyl and phenyl substituted with from one to three members each selected from the group consisting of halo, loweralkyl, and loweralkoxy.

4,119,640

POLYMERIZABLE EPOXIDE-MODIFIED COMPOSITIONS

Leonard Edward Hodakowski, St. Albans; Clairborn Lee Osborn, Charleston, both of W. Va., and Edward Bruce Harris, Spring Valley, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 10, 1975, Ser. No. 594,670
Int. Cl.[2] C07C *69/54;* **C07D** *319/04*
U.S. Cl. 260—340.7 **25 Claims**

1. A polymerizable epoxide-modified composition comprising the reaction product mixture of the conjoint reaction of:

(I) a vinylated carboxylic acid selected from the group consisting of:

(a) acrylic acid, and

(b) methacrylic acid; and

(II) an aliphatic epoxide selected from the group consisting of:

(a) an epoxide of a long chain unsaturated fatty acid, or the

ester thereof, having an aliphatic chain of from 10 to 24 carbon atoms and at least one oxirane group, and

(b) an epoxide of a long chain unsaturated fatty oil having esterified aliphatic acid chains of from 10 to 24 carbon atoms wherein at least one of said esterified chains contains an oxirane group; and

(III) a diepoxide selected from the group consisting of:

(a) an epoxycycloalkyl diepoxide having at least one epoxycycloalkyl group wherein said cycloalkyl group has 5 or 6 ring carbon atoms, and

(b) a diglycidyl compound wherein the glycidyl group is attached to a phenyl group via a —O— link, and

(IV) a reactive-group-containing modifier selected from the group consisting of:

(a) aromatic and aliphatic carboxylic acids wherein the aromatic group has 6 ring carbon atoms and the aliphatic chain has from 2 to 10 carbon atoms,

(b) the anhydrides of the carboxylic acids of (IV) (a),

(c) a phenol,

(d) an aromatic or aliphatic alcohol having from 1 to 10 carbon atoms,

(e) an aliphatic carboxylic acid amide having from 2 to 10 carbon atoms in the aliphatic chain, and

(f) an aliphatic carboxylic acid halide having from 2 to 15 carbon atoms in the aliphatic chain,

wherein in said polymerizable composition the amount of reacted component (II) is from 0.1 to 1 oxirane group equivalent per carboxyl group equivalent present in component (I), the amount of reacted component (III) is from 0.1 to 1 oxirane group equivalent per carboxyl group equivalent of reacted component (I), the amount of reacted component (IV) is from 0 to 1 reactive group equivalent per carboxyl group equivalent of reacted component (I) and wherein the sum of the total reacted oxirane equivalents of components (II) and (III) plus the reacted group equivalents of component (IV) in said polymerizable composition is from 0.1 to 1 equivalent per reacted carboxyl equivalent of component (I).

4,119,641
2-ARYL-4-ARYLOXYMETHYL-1,3-DIOXOLANES

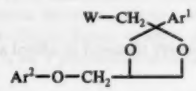
Jan Heeres, Vosselaar, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 732,828, Oct. 15, 1976, Continuation-in-part of Ser. No. 619,863, Oct. 6, 1975, abandoned, Continuation-in-part of Ser. No. 544,157, Jan. 27, 1975, Pat. No. 3,936,470. This application Jun. 2, 1977, Ser. No. 802,703

Int. Cl.² C07D *317/10*

U.S. Cl. 260—340.9 R **1 Claim**

1. A chemical compound having the formula:



wherein:

W is a member selected from the group consisting of halo, methylsulfonyloxy and (4-methylphenyl)sulfonyloxy;

Ar^1 is a member selected from the group consisting of naphthalenyl, nitrophenyl, cyanophenyl, lower alkylhalophenyl and lower alkyloxy-halophenyl; and

Ar^2 is a member selected from the group consisting of phenyl, substituted phenyl, naphthalenyl and halonaphthalenyl, and wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, cyano, phenyl and phenylmethyl.

4,119,642
BUTENOLIDE SYNTHESIS VIA CARBONYLATION OF VINYLMERCURIALS IN THE PRESENCE OF INORGANIC SALTS

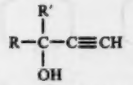
Richard Craig Larock, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation-in-part of Ser. No. 616,436, Sep. 24, 1975, Pat. No. 4,010,170. This application Nov. 19, 1976, Ser. No. 743,228

Int. Cl.² C07D *307/58, 307/94*

U.S. Cl. 260—343.6 **9 Claims**

1. A method of preparing β-halobutenolide, and gamma substituted derivatives thereof, said method comprising, reacting a compound of the formula:



wherein R and R′ are organic moieties selected to represent the gamma substituents of the particular butenolide being prepared, with a mercuric halide to provide a vinylmercuric halide, and carbonylating said vinylmercuric halide, in the presence of a carbonylating agent selected from the group consisting of noble metals and noble metal salts, and in the presence of a basic inorganic metal salt selected from the group consisting of Group I and Group II metal salts, and aluminum oxide to provide β-halobutenolide or a gamma substituted derivative thereof.

4,119,643
4-AMINO-6-NITRO DERIVATIVES OF 2H-3,4-DIHYDROBENZO[b]PYRANS

Eric Alfred Watts, Harlow, England, assignor to Beecham Group Limited, Great Britain

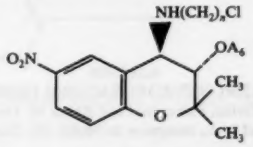
Filed Dec. 23, 1976, Ser. No. 753,899

Claims priority, application United Kingdom, Jan. 27, 1976, 02994/76

Int. Cl.² C07D *311/02;* A61K *31/35*

U.S. Cl. 260—345.2 **5 Claims**

1. A compound selected from the group consisting of a 3,4-dihydrobenzo[b]pyran of the formula:



and a pharmaceutically acceptable acid addition salt thereof, wherein n is an integer of from 2 to 5, and A_6 is hydrogen or acetyl.

4,119,644
ANTHRAQUINONOID DISPERSE DYES

Gerhard Epple, Weisenheim; Walter Himmele, Walldorf, and Werner Fliege, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

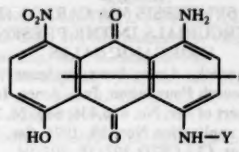
Filed May 2, 1977, Ser. No. 792,728

Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623172

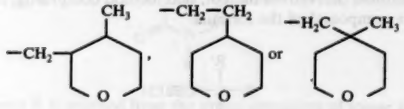
Int. Cl.² C07D *309/06*

U.S. Cl. 260—345.9 R **8 Claims**

1. Anthraquinonoid disperse dye of the formula



where X is chlorine or bromine, Y is



and n is 0, 1 or 2, or a mixture thereof.

4,119,645

METHOD OF PREPARING PHTHALIC ANHYDRIDE

Michel Auroy; Maurice Goharel, and Jacques Zoulalian, all of Chauny, France, assignors to Rhone-Progil, Paris, France

Continuation-in-part of Ser. No. 460,176, Apr. 11, 1974, abandoned. This application Jul. 20, 1977, Ser. No. 817,139
Claims priority, application France, Apr. 11, 1973, 73 13072
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.4 **14 Claims**

1. In a process for the preparation of phthalic anhydride by oxidation of ortho-xylene with air in the presence of an oxidizing catalyst in an exothermic reaction wherein the reaction gases issue at elevated temperature, circulating a heat exchange fluid through the reaction zone to maintain reaction temperature within said zone and to recover heat of reaction, recovering the heat of reaction from said heat exchange fluid and recovering heat from the reaction gases by passing said heat exchange fluid and said hot reaction gases in heat exchange with water at a temperature whereby the reaction gases issue from the heat exchange at a temperature at least 5° C. above the condensation temperature of phthalic anhydride to provide steam utilized in carrying out the process.

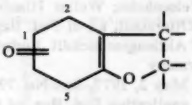
4,119,646

HEXAHYDROBENZOFURANONE COMPOUNDS

El Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Highland Park, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 400,484, Sep. 24, 1973, Pat. No. 4,011,239, which is a continuation-in-part of Ser. No. 755,732, Aug. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 714,447, Mar. 20, 1968, abandoned. This application Nov. 2, 1976, Ser. No. 737,942
Int. Cl.[2] C07D *307/79, 307/86*
U.S. Cl. 260—346.22 **3 Claims**

1. The compound having the formula



where the dangling valences are satisfied with hydrogen or a hydrocarbyl group, and wherein the =O is attached to the 1-carbon or the 5-carbon of the ring.

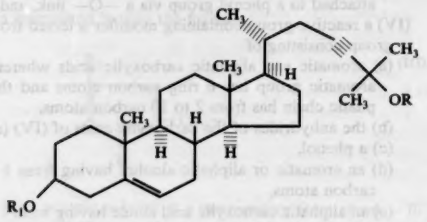
4,119,647

25-HYDROXYCHOLECALCIFEROL-23,24-^{3}H AND PROCESS FOR THE PREPARATION THEREOF

Arnold Alvin Liebman, Upper Saddle River, and Richard Robert Muccino, Verona, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

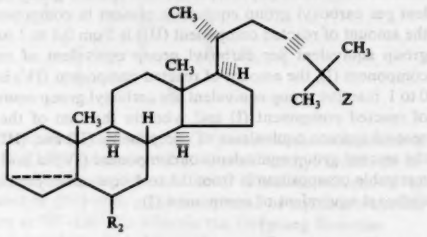
Filed Apr. 11, 1977, Ser. No. 786,158
Int. Cl.[2] C07J *9/00*
U.S. Cl. 260—397.2 **7 Claims**

1. A process for the preparation of a compound of the formula

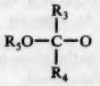


wherein R and R_1 are each independently lower alkanoyl which comprises

(a) contacting a compound of the formula



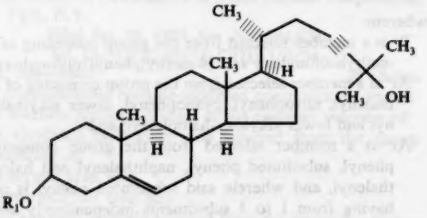
wherein R_2 is hydroxy, lower alkoxy, phenyl lower alkoxy, lower alkanoyloxy or benzoyloxy and Z is hydroxy or a group of the formula



wherein R_3 is hydrogen or lower alkyl, R_4 and R_5 are each independently lower alkyl and R_4 and R_5 taken together are lower alkylene of from 3 to 8 carbon atoms with a lower alkanoic acid of the formula

R_1OH

wherein R_1 is lower alkanoyl to afford a compound of the formula



wherein R_1 is as above

(b) contacting the compound obtained in step (a) with a lower alkanoic acid anhydride of the formula

$(R)_2O$

wherein R is as above in the presence of an acid acceptor and

(c) recovering the product.

4,119,648

THROMBOXANE B ALDEHYDE INTERMEDIATES

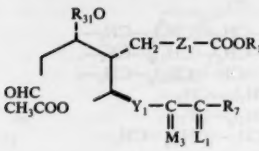
William P. Schneider, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 716,473, Aug. 20, 1976, Pat. No. 4,070,384, which is a continuation-in-part of Ser. No. 676,894, Apr. 14, 1976, Pat. No. 4,018,804. This application Sep. 6, 1977, Ser. No. 830,520

Int. Cl.[2] C09F *7/02;* **C11C** *3/00*

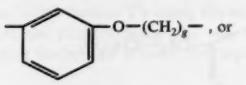
U.S. Cl. 260—405 **1 Claim**

1. A thromboxane intermediate of the formula:

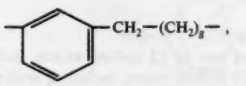


wherein R_{31} is a hydroxy hydrogen replacing group; wherein Z_1 is .

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,



(7)



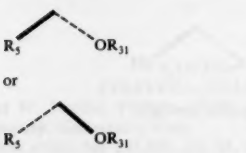
(8)

wherein *g* is one, 2, or 3;

wherein R_1 is alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one or two chloro, fluoro, or alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation;

wherein Y_1 is trans—CH=CH— or —CH_2CH_2—;

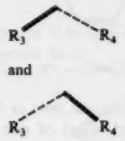
wherein M_3 is



wherein R_5 is hydrogen or methyl and R_{31} is a hydroxy-hydrogen replacing group;

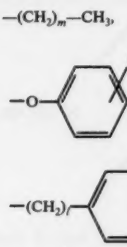
wherein L_1 is

or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; and

wherein R_7 is



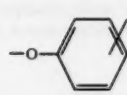
(1)

(2)

, or

(3)

wherein *l* is zero, one, two, or three, wherein *m* is one to 5, inclusive, T is alkyl of one to 3 carbon atoms, inclusive, alkoxy of one to 3 carbon atoms, inclusive, chloro, fluoro, or trifluoromethyl, and *s* is one, two, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



only when R_3 and R_4 are hydrogen or methyl, being the same or different.

4,119,649

ω-ARYL-9-DEOXY-9-METHYLENE-PGF-TYPE COMPOUNDS

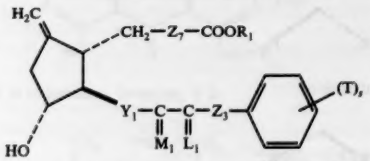
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 682,848, May 4, 1976, Pat. No. 4,060,534, which is a continuation-in-part of Ser. No. 651,622, Jan. 23, 1976, Pat. No. 4,021,467, which is a division of Ser. No. 556,768, Mar. 10, 1975, Pat. No. 3,950,363. This application Sep. 12, 1977, Ser. No. 832,242

Int. Cl.[2] C09F *7/00;* **C11C** *3/00*

U.S. Cl. 260—408 **226 Claims**

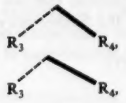
1. A prostaglandin analog of the formula



wherein Y_1 is trans—CH=CH—, —C≡C—, or —CH_2—CH_2—,
wherein Z_3 is oxa or methylene, *s* is zero, one, two or 3, and T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to three carbon atoms, inclusive, with the proviso that not more than two T's are other than alkyl, the various T's being the same or different, with the further proviso that Z_3 is oxa only when R_3 and R_4 are hydrogen or methyl, being the same or different;
wherein M_1 is

or

wherein R_5 is hydrogen or methyl;
wherein L_1 is



or a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro, and
wherein Z_7 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —C≡C—CH_2—$(CH_2)_g$—CH_2—, and
(8) —CH_2—C≡C—$(CH_2)_g$—CH_2—,
wherein *g* is one, 2, or 3; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,650

THROMBOXANE B DIALKYL-ACETAL DIOL INTERMEDIATES

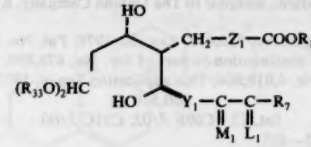
William P. Schneider, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 716,473, Aug. 20, 1976, Pat. No. 4,070,384, which is a continuation-in-part of Ser. No. 676,894, Apr. 14, 1976, Pat. No. 4,018,804. This application Sep. 6, 1977, Ser. No. 830,540

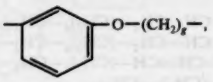
Int. Cl.[2] C09F *7/00*; C11C *3/00*

U.S. Cl. 260—408 **1 Claim**

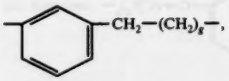
1. A thromboxane intermediate of the formula:



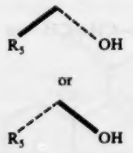
wherein
Z_1 is
(1) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis-CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7)



or
(8)



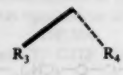
wherein *g* is one, 2, or 3;
wherein R_1 is alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one or two chloro, fluoro, or alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation;
wherein Y_1 is trans-CH=CH— or —CH_2CH_2—;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein L_1 is

-continued

or a mixture of



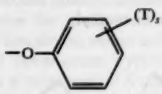
and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl; and

wherein R_7 is

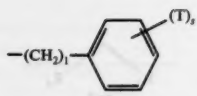
(1) $-(CH_2)_m-CH_3$,

(2)



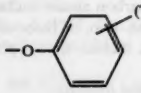
or

(3)



wherein *l* is zero, one, two, or three,

wherein *m* is one to 5, inclusive, T is alkyl of one to 3 carbon atoms, inclusive, alkoxy of one to 3 carbon atoms, inclusive, chloro, fluoro, or trifluoromethyl, and *s* is one, two, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



only when R_3 and R_4 are hydrogen or methyl, being the same or different; and

wherein R_{33} is alkyl of one to 5 carbon atoms, inclusive.

4,119,651

CIS-13-PGA$_2$ ANALOGS

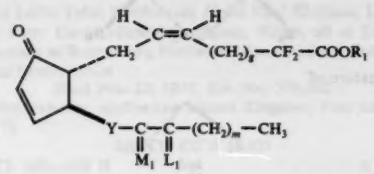
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,183

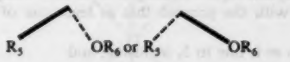
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 260—408 **49 Claims**

1. A compound of the formula

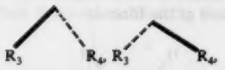


wherein Y is cis-CH=CH—; wherein *g* is 2, 3, or 4; wherein M_1 is

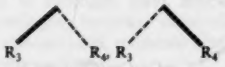


wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of

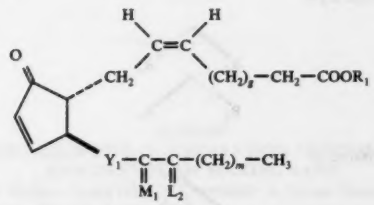


wherein R_3 and R_4 are hydrogen, methyl, fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

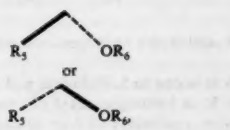
wherein *m* is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

19. A compound of the formula

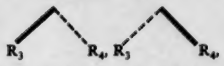


wherein Y_1 is cis-CH=CH—; wherein *g* is 2, 3, or 4; wherein M_1 is

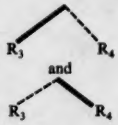


wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_2 is



or a mixture of

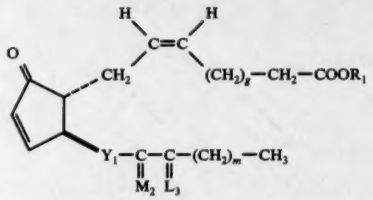


wherein R_3 and R_4 are hydrogen or fluoro, being the same or different, with the proviso that at least one of R_3 and R_4 is fluoro;

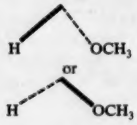
wherein *m* is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

30. A compound of the formula

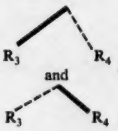


wherein Y is cis-CH=CH—; wherein *g* is 2, 3, or 4;
wherein M_2 is



wherein L_3 is

or a mixture of

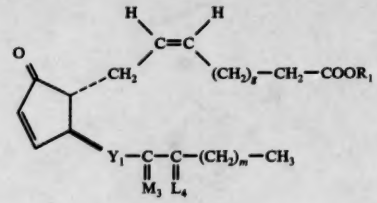


wherein R_3 and R_4 are hydrogen or methyl, being the same or different;

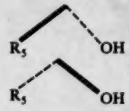
wherein *m* is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

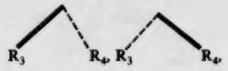
37. A compound of the formula



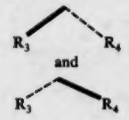
wherein Y is cis-CH=CH—;
wherein M_3 is



wherein R_5 is hydrogen or methyl;
wherein L_4 is



or a mixture of

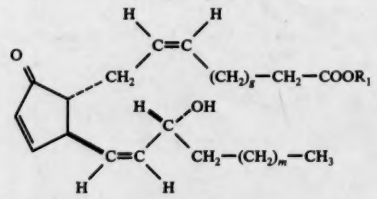


wherein R_3 and R_4 are hydrogen or methyl, being the same or different, with the proviso that one of R_3 and R_4 is methyl;

wherein *m* is one to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

48. A compound of the formula



or a mixture comprising that compound and the enantiomer thereof;

wherein *g* is 2 to 4;

wherein *m* is one to 5; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,652

CATALYTIC ASYMMETRIC HYDROGENATION

William S. Knowles, St. Louis, and Milton J. Sabacky, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 501,555, Aug. 29, 1974, abandoned, which is a division of Ser. No. 173,620, Aug. 20, 1971, Pat. No. 3,849,480, which is a continuation of Ser. No. 758,603, Sep. 9, 1968, abandoned. This application Jun. 25, 1976, Ser. No. 700,254

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R 7 Claims

1. An optically active metal coordination complex of the formula $M^1X_nL_3$ wherein M^1 is rhodium, X is selected from the group consisting of hydrogen, chlorine, fluorine, bromine and iodine, *n* is one of the integers one or three; each L is independently selected from the group $AR^5R^6R^7$, wherein A is selected from the group consisting of phosphorus and arsenic and R^5, R^6 and R^7 are each independently selected from the group consisting of hydrogen; alkyl having at least one carbon atom and a maximum of 12 carbon atoms; substituted alkyl, said substitution selected from the group consisting of amino, carbonyl, phenyl, nitro and alkoxy, said alkoxy having a maximum of 4 carbon atoms; phenyl; substituted phenyl, said substitution selected from the group consisting of alkyl having a maximum of 4 carbon atoms, amino and nitro, said substitution being less than 3 substituents; cycloalkyl having at least 3 carbon atoms and a maximum of 6 carbon atoms; pyrryl; thienyl; furyl; pyridyl and piperidyl, provided that at least one L group is optically active.

4,119,653

CO-ORDINATION COMPOUNDS OF PLATINUM

Martin Leslie Tobe, Northwood; Abdul Rauf Khokhar, London, and Peter David Michael Braddock, Beech Hill, Wigan, all of England, assignors to Rustenburg Platinum Mines Limited, Johannesburg, South Africa

Filed Apr. 5, 1977, Ser. No. 784,797

Claims priority, application United Kingdom, Apr. 6, 1976, 13888/76

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R 5 Claims

1. A co-ordination compound of platinum having the structure:-

in which X and Y are the same or different halogen and A and B are the same or different straight chain aliphatic amine groups co-ordinated to the Pt through their N atoms each having the general formula:

$$C_nR_{2n+1}NH_2$$

in which *n* may vary from 3 to 9 and in which all of the R groups are the same or different and are selected from the group consisting of hydrogen, aryl, alkaryl, halogen, pseudohalogen, hydroxy, carbonyl, formyl, nitro, amido, amino, sulphonic acid, sulphonic acid salt, carboxylic acid and carboxylic acid salt.

4,119,654

COMPOSITIONS CONTAINING PLATINUM

Martin Leslie Tobe, Northwood; Abdul Rauf Khokhar, London, and Peter David Michael Braddock, Wigan, all of England, assignors to Rustenburg Platinum Mines Limited, Johannesburg, South Africa

Filed Feb. 22, 1977, Ser. No. 770,313

Claims priority, application United Kingdom, Feb. 26, 1976, 7650/76

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R 6 Claims

1. A co-ordination compound of platinum having the structure:

in which X and Y are halogen and A and B are the same or different branched chain aliphatic amine groups or C-substituted branched chain aliphatic amine groups co-ordinated to the Pt through their N atoms each having the general formula

$$C_nR_{2n+1}NH_2$$

in which n may vary from 3 to 9 and in which all of the R groups are the same or different and are selected from the group consisting of hydrogen, alkyl, aryl, alkaryl, aralkyl, halogen, pseudohalogen, hydroxy, carbonyl, formyl, nitro, amido, amino, sulphonic acid, sulphonic acid salt, carboxylic acid and carboxylic acid salt.

6. A composition comprising a co-ordination compound of platinum having the structures:

in which X and Y are halogen and A and B are exo 2 amino norbornane.

4,119,655

NOVEL GRAPHITE INTERCALATION COMPOUNDS AND METHOD OF MAKING SAME

Roger Hulme, Somerville, N.J., assignor to Exxon Research & Engineering Co., Linden, N.J.

Filed Jan. 17, 1977, Ser. No. 760,157

Int. Cl.[2] C07F *9/90*

U.S. Cl. 260—440 13 Claims

1. A method of preparing intercalates of graphite comprising contacting graphite with a Lewis acid and ClF_3 in the presence of HF at a temperature in the range of from about −80° to +100° C for a time sufficient for intercalation to occur, said Lewis acid being a fluoride of an element selected from B, Si, Ge, Sn, Pb, P, As, Sb, Bi, Ti, Zr, Hf, V, Nb and Ta.

10. A blue compound of graphite consisting essentially of graphite, ClF_3, HF and a Lewis acid fluoride of an element selected from B, Si, Ge, Sn, Pb, P, As, Sb, Bi, Ti, Zr, Hf, V, Nb and Ta, said graphite being present in an amount ranging from about 30 to about 55 weight %.

4,119,656

PREPARATION OF HYDROXYLATED COMPOUNDS FROM SYNTHESIS OF GAS WITH PALLADIUM CATALYSTS

Marvin Lloyd Poutsma, Ossining; Jule Anthony Rabo, Armonk, and Alan Peter Risch, Garnersville, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 638,304, Dec. 8, 1975, abandoned. This application May 16, 1977, Ser. No. 797,242

Int. Cl.[2] C07C *27/06*

U.S. Cl. 260—449 R **5 Claims**

1. A heterogeneous catalytic process for selectively producing hydroxylated hydrocarbons containing from 1–2 carbon atoms from a gaseous mixture containing carbon monoxide and hydrogen which comprises contacting said gaseous mixture with a catalyst consisting essentially of palladium at a reaction temperature of from about 200° C. to about 400° C. and a reaction pressure of from about 150 to about 20,000 psia, the reaction pressure being correspondingly increased as reaction temperature is increased such that hydroxylated organic compounds are selectively produced in quantities greater than about 90%, by weight, of the total product mixture while substantially avoiding the concomitant formation of methane or higher molecular weight hydrocarbons.

4,119,657

NOVEL PEROXYCARBONATE

Takeshi Komai, Aichi, and Kazuo Matsuyama, Gamagori, both of Japan, assignors to Nihon Oil and Fats Co., Ltd., Tokyo, Japan

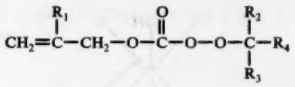
Filed May 20, 1977, Ser. No. 798,846

Claims priority, application Japan, Jun. 16, 1976, 51/69720

Int. Cl.[2] C07C *69/02*

U.S. Cl. 260—453 RZ **7 Claims**

1. A compound having the formula



wherein R_1 is hydrogen or alkyl having 1 to 4 carbon atoms, R_2 and R_3 are alkyls having 1 to 4 carbon atoms, and R_4 is alkyl having 1 to 12 carbon atoms.

4,119,658

AROMATIC ISOCYANATO-POLYSULPHONIC ACIDS

Dieter Dieterich, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 30, 1977, Ser. No. 782,642

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615876

Int. Cl.[2] C07C *119/048*; C07D *229/00*

U.S. Cl. 260—453 AR **9 Claims**

4. Solid Isocyanatopolysulphonic acids of the formula

$$(OCN)_n R(SO_3H)_m$$

which may be present in the dimerized form containing uretdione groups, in which formula R represents a mononuclear, dinuclear or trinuclear aromatic hydrocarbon group having a total of 6 to 20 carbon atoms, which may be interrupted by alkylene groups having 1 to 3 carbon atoms or substituted by alkyl groups having 1 to 4 carbon atoms; *n* represents an integer of from 1 to 3; and *m* an integer of from 2 to 6.

7. A process for the preparation of solid aromatic isocyanatopolysulphonic acids comprising reacting monoisocyanates or polyisocyanates having exclusively aromatically bound isocyanate groups with sulphur trioxide at −10° C. to 140° C., wherein the isocyanate used as starting material which is to be sulphonated is reacted with at least 50% by weight of sulphur trioxide, based on the quantity of isocyanate used as starting material.

4,119,659

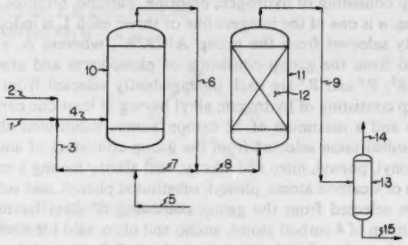
PRODUCTION OF ETHYL CHLOROTHIOFORMATE

Carlo G. Alesandrini, Jr., Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 636,266, Nov. 28, 1975, Pat. No. 4,012,405. This application Mar. 9, 1977, Ser. No. 775,821

Int. Cl.[2] C07C *153/09*

U.S. Cl. 260—455 R **26 Claims**



1. A process for production of a chlorothioformate having the formula

in which R is C_1–C_{15} alkyl, cycloalkylmethyl having from 3 to 7 carbon atoms in the cycloalkyl portion, C_3–C_7 cycloalkyl, C_2–C_5 alkenyl, phenyl, chloro-substituted phenyl, benzyl or chloro-substituted C_1–C_{15} alkyl in which the chloro-substituent is situated at least as far as the gamma-carbon atom, with respect to the sulfur atom, comprising:

(a) contacting a mercaptan having the formula RSH with phosgene in a first continuous liquid phase reaction zone in the presence of a catalyst comprising activated carbon;

(b) removing a first reaction product from the first reaction zone;

(c) contacting the first reaction product with a catalyst comprising activated carbon in a second continuous liquid phase reaction zone; and

(d) removing a second reaction product comprising the chlorothioformate from the second reaction zone.

4,119,660

METHOD FOR MAKING DIPEROXYACIDS

James Peyton Hutchins, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 718,281, Aug. 27, 1976, abandoned. This application Jul. 25, 1977, Ser. No. 818,897

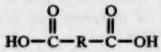
Int. Cl.[2] C07C *179/10*

U.S. Cl. 260—502 R **5 Claims**

1. A process for making aliphatic diperoxyacids comprising the following steps:

A. Forming a solution containing from about 6% to about 14% hydrogen peroxide, about 69% to about 82% sulfuric acid and about 6% to about 21% water,

B. Adding to the solution of A an aliphatic dibasic carboxylic acid having the formula



wherein R is an alkylene group containing from about 10 to 18 carbon atoms to form a mixture,

C. Maintaining the mixture of B at a temperature of from about 10° C. to about 50° C. until the peroxyacid crystals are formed,

D. Recovering the diperoxyacid crystals of step C by means of filtration; and

E. Washing the diperoxyacid crystals with water and drying said crystals.

4,119,661
PROCESS FOR PRODUCING ALKALI SALTS OF ALKYLSULPHONIC ACIDS

Efim Stepanovich Balakirev, ulitsa akademika Skryabina, 30, korpus 2, kv. 43; Galina Ilinichna Bogomolova, ulitsa Novo-Ostapovskaya, 8, kv. 69; Abram Iosifovich Gershenovich, ulitsa M.Ulyanovoi, 16, kv. 124, and Irina Viktorovna Gruzdeva, ulitsa Tikhomirova, 7, korpus 3, kv. 121, all of Moscow, U.S.S.R.

Filed Mar. 30, 1977, Ser. No. 783,027
Claims priority, application U.S.S.R., Apr. 5, 1976, 2343735
Int. Cl.² C07C *143/02*
U.S. Cl. 260—513 R **4 Claims**

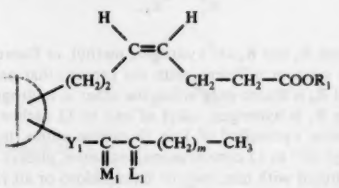
1. A process for producing alkali metal salts of alkylsulfonic acids, wherein the alkyl contains 11 to 18 carbon atoms, comprising sulfoxidation of n-paraffins selected from the group consisting of 11 to 18 carbon atoms, and mixtures thereof; to form a reaction mixture which includes the corresponding alkylsulfonic acids, sulfuric acid, unreacted n-paraffins, sulfurous anhydride and water; outgassing said reaction mixture; neutralizing the outgassed reaction mixture with an aqueous solution of alkali metal hydroxides at a temperature of from 40°–95° C. to form an alkali metal salt neutralization product; maintaining the neutralization product at a temperature of from 100° to 160° C. under a gauge pressure of from 1 to 6 atmospheres to stratify the neutralization product into two layers, the upper layer comprising unreacted n-paraffins, the lower layer comprising an aqueous solution of a mixture of alkali metal salts of corresponding alkylsulfonic acids and sulfuric acid; separating the upper layer; adding saturated aliphatic C_1 to C_4 monohydric alcohols so that the weight ratio of lower layer to alcohol equals 1:1–2 respectively, to form an aqueous alcohol solution containing alkali metal salts of the corresponding alkylsulfonic acids and sulfuric acid; maintaining the resulting aqueous alcohol salt solution of said acids at a temperature of from 2° to 20° C. to precipitate the alkali metal salts of sulfuric acid; separating the precipitate from the aqueous alcohol solution of alkali salts of the corresponding alkylsulfonic acids; and recovering said alkylsulfonic acids.

4,119,662
CIS-4,5-DIDEHYDRO-13,14-DIDEHYDRO-PGF$_1$ COMPOUNDS

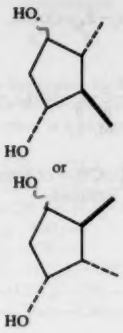
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,739, Feb. 13, 1976, Pat. No. 4,029,681.
This application Mar. 7, 1977, Ser. No. 776,553
Int. Cl.² C07C *177/00*
U.S. Cl. 562—503 **53 Claims**

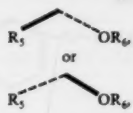
1. A prostaglandin analog of the formula:



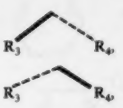
wherein D is



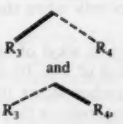
wherein Y_1 is —C≡C—;
wherein m is 1 to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



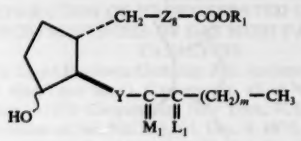
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,663
INTER-OXA-9-DEOXY-PGF COMPOUNDS

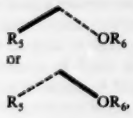
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,243, Sep. 17, 1975, Pat. No. 4,033,989.
This application Apr. 11, 1977, Ser. No. 786,716
Int. Cl.² C07C *177/00*
U.S. Cl. 562—503 **33 Claims**

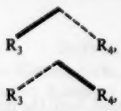
1. A prostaglandin analog of the formula



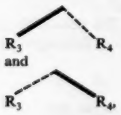
wherein Y is cis-CH=CH— or trans-CH=CH—;
wherein *m* is 1 to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and
wherein Z_8 is
(1) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$,
(2) $-(CH_2)_2-O-(CH_2)_g-CH_2-$, or
(3) $-(CH_2)_3-O-(CH_2)_g-$,
wherein *g* is 1, 2, or 3.

4,119,664

5-OXA-13,14-DIDEHYDRO-PGE$_1$ COMPOUNDS

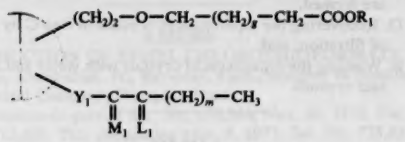
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 657,739, Feb. 13, 1976, Pat. No. 4,029,681. This application Mar. 7, 1977, Ser. No. 775,074

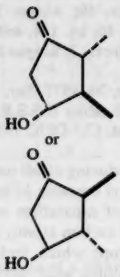
Int. Cl.^{2} C07C *177/00*

U.S. Cl. 562—503 **53 Claims**

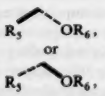
1. A prostaglandin analog of the formula:



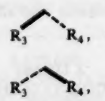
wherein D is



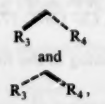
wherein Y_1 is $-C\equiv C-$;
wherein *g* is 1, 2, or 3;
wherein *m* is 1 to 5, inclusive;
wherein M_1 is



wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen; and
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,665
MANUFACTURE OF 6-AMINOCAPROAMIDE

Hans-Martin Weitz, Bad Durkheim; Rolf Fischer, Heidelberg, and Franz Josef Broecker, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 27, 1976, Ser. No. 757,768

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1976, 2601462

Int. Cl.[2] C07C *103/127*

U.S. Cl. 260—561 A **7 Claims**

1. A process for the manufacture of 6-aminocaproamide which comprises reacting methyl or ethyl 5-cyanovalerate with excess ammonia at temperatures of from 25° to 200° C, contacting the resulting 5-cyanovaleramide at temperatures of from 25° to 200° C and pressures of from 50 to 300 bars in the presence of ammonia and of supported cobalt and/or nickel catalysts obtained by calcination of compounds of formula I

$$[(Mg_aNi(II)_bCo(II)_c)Al_2]CO_3(OH)_{16} \cdot 4\,H_2O \qquad I$$

in which *b* and *c* denote integers or decimal numbers of from 0 to 6 and *a* denotes an integer or decimalnumber of from 0 to 4, $2(a+b+c)$ being 12, at temperatures of from 200° to 600° C, and subsequently reducing with hydrogen at elevated temperature.

4,119,666
2-DECARBOXY-2-AMINO-METHYL-9-DEOXY-9-METHYLENE-PGF-TYPE COMPOUNDS

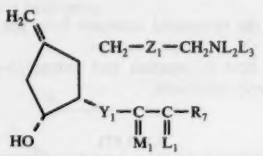
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 682,848, May 4, 1976, Pat. No. 4,060,534, which is a continuation-in-part of Ser. No. 651,622, Jan. 23, 1976, Pat. No. 4,051,467, which is a division of Ser. No. 556,768, Mar. 10, 1975, Pat. No. 3,950,363. This application Sep. 12, 1977, Ser. No. 832,243

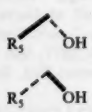
Int. Cl.[2] C07C *87/45, 87/50, 177/00*

U.S. Cl. 260—563 R **2 Claims**

1. A prostaglandin analog of the formula



wherein Y_1 is trans-CH=CH—, —C≡C—, or —CH_2CH_2—;
wherein M_1 is



wherein R_5 is hydrogen or methyl;
wherein L_1 is

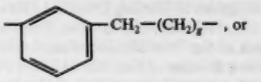
or a mixture of

-continued

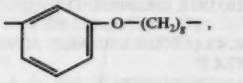
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein Z_1 is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —C≡C—CH_2—$(CH_2)_g$—CH_2—,
(8) —CH_2—C=C—$(CH_2)_g$—CH_2—,

(9)

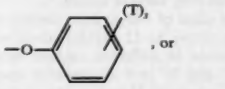


(10)

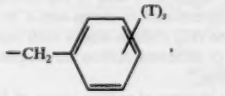


wherein *g* is one, 2, or 3;
wherein R_7 is
(1) —$(CH_2)_m$—CH_3,

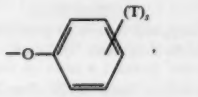
(2)



(3)



wherein *m* is one to 5, inclusive, T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive and *s* is zero, one, 2, or 3, the various T's being the same or different, with the proviso that not more than two T's are other than alkyl, with the further proviso that R_7 is



wherein T and *s* are as defined above, only when R_3 and R_4 are hydrogen or methyl, being the same or different; and
wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive.

4,119,667
HALOANILINE DERIVATIVES AS PLANT GROWTH MODIFIERS

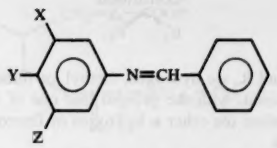
Wayne O. Johnson, Warminster; Harlow L. Warner, Hatboro, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 290,190, Sep. 18, 1972, Pat. No. 3,862,833. This application Nov. 25, 1974, Ser. No. 526,655

Int. Cl.[2] C07C *119/00*

U.S. Cl. 260—566 F **3 Claims**

1. A compound of the formula:



wherein X is chlorine, bromine or iodine; Y and Z are selected independently from hydrogen, chlorine and bromine; with the provision that one and only one of Y and Z is hydrogen.

4,119,668

N,N'-BRIDGED-BIS[N,N'SUBSTITUTED-2-HYDROXY ALKANEAMMONIUM] SALTS

Guy D. Diana, Stephentown, and Royal A. Cutler, Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 739,447, Nov. 8, 1976, Pat. No. 4,085,144, which is a division of Ser. No. 582,646, Jun. 2, 1975, Pat. No. 4,022,833, which is a division of Ser. No. 332,267, Feb. 14, 1973, Pat. No. 3,928,427, which is a continuation-in-part of Ser. No. 123,097, Mar. 10, 1971, abandoned. This application Sep. 15, 1977, Ser. No. 833,485

Int. Cl.[2] C07C *87/30;* A61K *31/14*

U.S. Cl. 260—567.6 P **7 Claims**

1. N,N'-(X)-bis[N-(R')-2-(R)-2-(ZO)-ethylamine] N,N'-di(atertiary alkyl of one to four carbon atoms)diammonium quaternary salt or N,N'-dibenzyldiammonium quaternary salt wherein:

R is alkyl of three to fifteen carbon atoms or cycloalkyl of four to seven ring carbon atoms;

R' is atertiary alkyl of one to four carbon atoms;

X is alkylene of two to 12 carbon atoms with bonds to the nitrogen atoms at different carbon atoms or X'-Y-X", wherein X' and X" are alkylene of one to four carbon atoms with bonds to Y and to the nitrogen atoms at the same or different carbon atoms and Y is cycloalkylene of four to seven ring carbon atoms with bonds to X' and X" at the same or different carbon atoms, phenylene, vinylene or ethynylene;

the sum of the number of carbon atoms of R and X is at least nine; and

Z is hydrogen.

4,119,669

3,4-XYLIDINE COMPOUNDS WHICH ARE USEFUL AS HERBICIDES AND AS INTERMEDIATES IN THE PREPARATION OF 2,6-DINITRO-3,4-XYLIDINE HERBICIDES

Stephen David Levy, and Robert Eugene Diehl, both of Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 373,079, Jun. 25, 1973, Pat. No. 3,920,742. This application Mar. 21, 1975, Ser. No. 560,847

Int. Cl.[2] C07C *87/60, 87/62;* A01N *9/20*

U.S. Cl. 260—577 **1 Claim**

1. A compound selected from the group consisting of N-sec-butyl-6-nitro-3,4-xylidine; N-(1-ethylpropyl)-2-nitro-3,4-xylidine; and N-(1-ethylpropyl)-6-nitro-3,4-xylidine.

4,119,670

PROCESS AND REACTOR FOR PREPARING ETHANOLAMINES

Michio Tsuchiya, Hiratsuka, Japan, assignor to Nippon Shokubai Kagaku Kogyo Co., Ltd, Osaka, Japan

Filed Jul. 11, 1977, Ser. No. 814,686

Claims priority, application Japan, Jul. 15, 1976, 51/83527

Int. Cl.[2] C07C *85/145;* B01D *3/02*

U.S. Cl. 260—585 C **8 Claims**

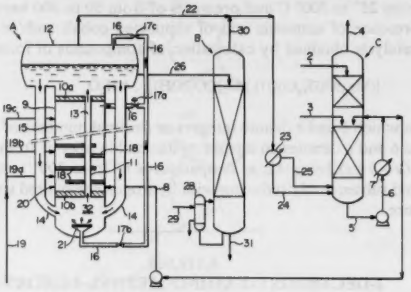
1. In a process for preparing ethanolamines by the reaction of ethylene oxide with ammonia in the liquid phase, the improvement comprising

(1) reacting ammonia and ethylene oxide in a reaction zone;

(2) passing the reaction mixture through pressure reducing means to reduce the pressure of said reaction mixture and partially vaporize the reaction mixture and feeding the partially vaporized reaction mixture to a space below the reaction zone;

(3) passing the partially vaporized reaction mixture upwardly through the reaction zone to absorb heat of reaction and to further vaporize the reaction mixture;

(4) feeding the further vaporized reaction mixture of step (3) to a gas-liquid separation zone for separation into a gas phase and a liquid phase;



(5) passing one portion of the liquid phase to the space below said reaction zone whereby said portion mixes with the partially vaporized reaction mixture from step (2) and is passed therewith through said reaction zone in step (3) and returned to said gas-liquid separation zone;

(6) passing the vapor phase to an ammonia absorber whereby the ammonia in said vapor phase is absorbed to form an ammonia solution which is fed to the reaction zone;

(7) passing the remaining portion of the liquid phase to an ammonia desorber to recover ammonia and ethanolamine; and

(8) feeding the recovered ammonia from the ammonia desorber to the ammonia desorber;

whereby heat of reaction and unreacted ammonia are effectively recovered.

4,119,671

PROCESS FOR THE PREPARATION OF HYDROXYBENZALDEHYDES

Kurt Bauer, Holzminden; Reiner Mölleken, Golmbach Ortsteil Warbsen; Helmut Fiege, Leverkusen, and Karlfried Wedemeyer, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

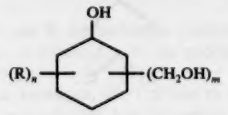
Filed Apr. 29, 1977, Ser. No. 792,425

Claims priority, application Fed. Rep. of Germany, May 7, 1976, 2620254

Int. Cl.[2] C07C *45/16*

U.S. Cl. 260—600 R **8 Claims**

1. In the process for the production of hydroxybenzaldehydes by oxidation of hydroxybenzyl alcohols of the formula



in which

m represents 1, 2 or 3 and

n represents the number which results from the difference (5 − m) and the radicals R independently of one another

represent hydrogen, alkyl, aryl, alkoxy, hydroxyl, halogen, carboxyl or a fused ring,

with oxygen or oxygen-containing gases in an aqueous alkaline medium at a temperature in the range of 0 to 100° C. in the presence of a platinum metal catalyst, the improvement comprising carrying out the oxidation in the presence of lead and/or compounds thereof.

4,119,672

INTER-OXA-9-DEOXY-9,10-DIDEHYDRO-PGD$_1$ COMPOUNDS

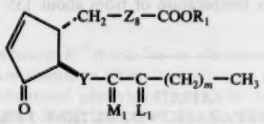
Douglas Ross Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,242, Sep. 17, 1975, Pat. No. 4,016,184. This application Dec. 30, 1976, Ser. No. 755,737

Int. Cl.^{2} C07C *177/00*

U.S. Cl. 562—503 **33 Claims**

1. A prostaglandin analog of the formula

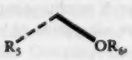


wherein Y is Cis-CH=CH— or trans-CH=CH—;

wherein *m* is 1 to 5, inclusive;

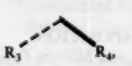
wherein M_1 is

or

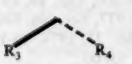


wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



or a mixture of



and

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_8 is

(1) $-CH_2-O-CH_2-(CH_2)_g-CH_2-$

(2) $-(CH_2)_2-O-(CH_2)_g-CH_2-$, or

(3) $-(CH_2)_3-O-(CH_2)_g-$,

wherein *g* is 1, 2, or 3.

4,119,673

MANUFACTURE OF CONCENTRATED AQUEOUS SOLUTIONS OF FORMALDEHYDE

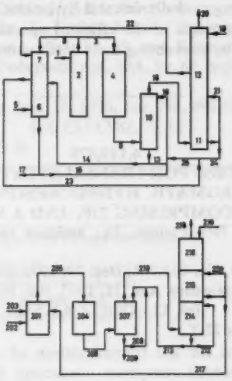
Albrecht Aicher, Frankenthal; Hans Haas, Ludwigshafen; Hans Diem, Ludwigshafen; Christian Dudeck, Ludwigshafen; Fritz Brunnmueller, Ludwigshafen, and Gunter Lehmann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 16, 1975, Ser. No. 613,925

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1974, 2444586

Int. Cl.^{2} C07C *45/16*

U.S. Cl. 260—603 C **17 Claims**



1. In a process for the manufacture of a concentrated aqueous solution of formaldehyde by a catalytic oxidative dehydrogenation reaction of a starting reaction mixture comprising water, methanol and air over a catalyst bed of silver crystals arranged in a reactor and in the presence of steam at elevated temperatures of about 550° C. to 780° C., followed by absorption in water of the formaldehyde formed, the improvement which comprises:

carrying out the reaction with a throughput of said starting mixture consisting essentially of from 1 to 3 tonnes of methanol per square meter of catalyst bed cross-section per hour together with from 0.1 to 1.8 moles of water and 0.04 to 0.4 mole of formaldehyde per mole of total methanol fed to the catalyst;

absorbing the formaldehyde in an absorption stage by washing the off-gas from the reactor with water to form an aqueous formaldehyde solution; and

recycling part of the formaldehyde and water formed in the absorption stage, so as to return amounts of from 0.04 to 0.4 mole of formaldehyde and up to 1.8 moles of water per mole of total methanol fed to the catalyst, as an addition in making up said starting mixture.

4,119,674

PROCESS FOR PRODUCTION OF 1,1,1-TRICHLOROETHANE AND VINYLIDENE CHLORIDE

Theodore S. Boozalis, and John B. Ivy, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1976, Ser. No. 718,642
Int. Cl.[2] C07C *21/18, 17/00, 21/00*
U.S. Cl. 260—658 R 2 Claims

1. In a process for chlorinating a member of the group consisting of ethane, ethylene, ethyl chloride, 1,1-dichloroethane, and mixtures thereof by the thermal chlorination to produce one or more of 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethylene, as the principal products, which products are further reacted under catalytic conditions to produce more highly chlorinated products and/or unsaturated products in liquid phase reactions in which numerous by-products containing more than 2 carbon atoms in the product stream of the thermal chlorination are detrimental to further processing in liquid phase catalytic hydrochlorination and/or dehydrochlorination reactions, the improvement which comprises chlorinating the thermal chlorination reactor effluent at a temperature below about 100° C. and in the absence of light and catalyst with up to about stoichiometric equivalent of chlorine, based on the concentration of said detrimental by-products in the thermal chlorination reactor effluent, and thereafter passing the entire chlorinated effluent stream without separation or purification to the liquid phase catalytic reaction, said chlorination rendering said detrimental by-products of the thermal chlorination harmless to the efficient operation of the subsequent process by preventing their deactivation of the catalyst.

4,119,675

PROCESS FOR TRANSALKYLATION OF ALKYLAROMATIC HYDROCARBONS USING A CATALYST COMPRISING TiF_4 AND A METAL OXIDE

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 644,786, Dec. 29, 1975, Pat. No. 4,048,248. This application Apr. 21, 1977, Ser. No. 789,581
Int. Cl.[2] C07C *3/62, 5/28*
U.S. Cl. 260—672 T 8 Claims

1. A process for the transalkylation of an alkylaromatic hydrocarbon which comprises contacting the alkylaromatic hydrocarbon at transalkylation conditions with a catalyst consisting essentially of titanium tetrafluoride and a Group III-A metal oxide which contains surface hydroxyl groups, and recovering a transalkylated hydrocarbon as a product of the process.

4,119,676

PROCESS FOR ISOMERIZATION OF ALKYLAROMATIC HYDROCARBON

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 644,786, Dec. 29, 1975, Pat. No. 4,048,248. This application Apr. 21, 1977, Ser. No. 789,582
Int. Cl.[2] C07C *5/28, 3/62*
U.S. Cl. 260—668 A 8 Claims

1. A process for the isomerization of an alkylaromatic hydrocarbon comprising contacting the aromatic hydrocarbon at isomerization conditions with a catalyst consisting essentially of titanium tetrafluoride and a Group III-A metal oxide which contains surface hydroxyl groups, and recovering an isomerized aromatic hydrocarbon as a product of the process.

4,119,677

TITANIUM TETRACHLORIDE AS HETEROGENEOUS CATALYST FOR TRANSALKYLATION OF ALKYLAROMATIC HYDROCARBONS

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 644,783, Dec. 29, 1975, Pat. No. 4,048,247. This application Apr. 21, 1977, Ser. No. 789,583
Int. Cl.[2] C07C *3/62, 5/28*
U.S. Cl. 260—672 T 6 Claims

1. A process for the transalkylation of an alkylaromatic hydrocarbon which comprises contacting the alkylaromatic hydrocarbon at transalkylation conditions with a catalyst system consisting essentially of titanium tetrachloride on an activated Group III-A metal oxide having surface hydroxyl groups, said catalyst system having been prepared by passing $TiCl_4$ vapor with an inert gas over said metal oxide at a temperature of 20° C. to 400° C. for 1 to 10 hours and thereafter thermally treating the resultant $TiCl_4$-containing oxide in an inert atmosphere at a temperature of from about 135° C. to about 550° C.

4,119,678

DESORBENT FOR SEPARATION OF BUTENE-1 FROM A C4 HYDROCARBON MIXTURE USING ZEOLITE X

Richard W. Neuzil, Downers Grove, and Richard L. Fergin, Mt. Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 12, 1977, Ser. No. 815,041
Int. Cl.[2] C07C *11/12*
U.S. Cl. 260—677 A 13 Claims

1. A process for separating butene-1 from a feed containing butene-1 and other C_4 hydrocarbons, which process comprises the steps of:

(a) contacting said feed with a type X zeolite containing potassium cations to effect selective adsorption of butene-1 by said adsorbent;

(b) contacting said adsorbent containing adsorbed butene-1 with a desorbent comprising 90 to 10 LV% of hexene-1 and 10 to 90 LV% of a desorbent component selected from the group of cyclohexene and cyclohexane and mixtures thereof, thereby displacing said butene-1 from said adsorbent.

4,119,679

POWDER COATING COMPOSITION

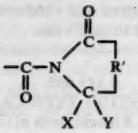
Hiroshi Nishizawa; Shigeyoshi Tanaka, and Minoru Fujishima, all of Ibaragi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 624,260, Oct. 20, 1975, abandoned. This application Oct. 11, 1977, Ser. No. 840,777
Claims priority, application Japan, Oct. 21, 1974, 49-120358
Int. Cl.[2] C08L *67/02, 63/00*
U.S. Cl. 260—835 9 Claims

1. A powder coating composition which comprises a mixture of

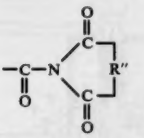
(A) a polyester resin obtained by the polycondensation of at least one polyol and at least one polycarboxylic acid, said polyol and said polycarboxylic acid containing hydroxyl and carboxyl groups in such relative proportions and being condensed in such amount as to provide free hydroxyl groups in the resultant polyester, at least 80 mol.% of said polycarboxylic acid being an aromatic carboxylic acid, said polyester having a softening point in the range of 50°–180° C.,

(B) at least one curing agent for said polyester which is an aliphatic, cycloaliphatic, heterocyclic or aromatic compound having a softening point of at least 40° C. and contains at least two terminal groups of the general formulae:



(I)

wherein R' stands for an alkylene group with 1–11 carbon atoms, and X and Y may be the same or different and each represents a hydrogen atom or an alkyl group with 1–5 carbon atoms, or



(II)

wherein R'' stands for an alkylene group with 1–11 carbon atoms, an alkenylene group, a phenylene group or a substituted phenylene group, the amount of said curing agent being such that the terminal groups thereof are present in a ratio of 0.5–1.5 equivalents per equivalent of the free hydroxyl groups in said polyester; and

(C) a solid epoxy resin in an amount of 3–15 parts by weight per 100 parts by weight of said ingredient (A).

4,119,680

COPOLYESTERS AS IMPROVED BINDERS AND FINISHES FOR POLYESTER-CONTAINING FABRICS

Raymond N. Vachon, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1976, Ser. No. 716,920

Int. Cl.[2] C08L *61/20*

U.S. Cl. 260—850 **2 Claims**

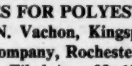
1. A composition comprising:

I. the graft copolymer of Components A, B and C as follows

A. a water-dispersible polyester derived essentially from

(1) at least one dicarboxylic acid:

(2) at least one diol, at least 20 mole percent of said diol component being a poly(ethylene glycol) having the formula

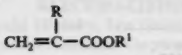


wherein *n* is an integer of from 2 to about 10,

(3) at least one difunctional dicarboxylic acid sulfomonomer containing a $-SO_3M$ group attached to an aromatic nucleus, wherein M is hydrogen or Na^+, Li^+, K^+ or a combination thereof, said sulfomonomer component constituting at least about 8 mole percent to about 45 mole percent of the sum of the moles of said Components 1, 3 and 4, and

(4) from about 4 to about 8 mole percent of the sum of the moles of said Components 1, 3 and 4 of an α,β-unsaturated dicarboxylic acid selected from the group consisting of fumaric acid, maleic acid, itaconic acid and p-carboxycinnamic acid; said polymer having an inherent viscosity in the range of from about 0.15 to about 0.5 as measured at 25° C. and a concentration of about 0.5 gram of said polyester per 100 ml. of a solvent composed of 60% phenol and 40% tetrachloroethane;

B. from 10 to 80 weight percent based on the total weight of Components A, B and C of an acrylic monomer having the formula



wherein R is hydrogen, methyl or ethyl and R^1 is an alkyl radical having from 1 to about 8 carbon atoms, vinyl acetate or styrene; and

C. from 2 to 10 weight percent based on the weight of Components A, B and C of a reactive monomer selected from acrylamide, methacrylamide, hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate and hydroxypropyl methacrylate; and

II. from 1 to 10 weight percent based on the weight of Components A, B and C of a crosslinking agent selected from melamine-formaldehyde condensates, methylated melamine-formaldehyde condensates, urea-formaldehyde condensates, methylated urea-formaldehyde condensates, guanamine-formaldehyde condensates and methylated guanamine-formaldehyde condensates.

4,119,681

ADHESIVE

Roman Alexandrovich Veselovsky, Kharkovskoe shosse, 21/3, kv. 179; Tatyana Esperovna Lipatova, Vladimirskaya ulitsa, 51/53, kv. 22; Raisa Alexandrovna Kimgir, ulitsa Vernadskogo, 65, kv. 105; Jury Konstantinovich Znachkov, ulitsa Dobrokhotova, 5, kv. 177, all of Kiev; Dmitry Maximovich Pyanykh, Pionersky, ulitsa Gospitalnaya, 16, Kaliningradskaya oblast; Nuribek Nabievich Shmanov, ulitsa Baimukhanova, 26A, kv. 5, Guriev; Nikolai Dmitrievich Trifonov, ulitsa Prazhskaya, 29/1, kv. 69, and Konstantin Alexeevich Zabela, ulitsa Podvysotskogo, 10A, kv. 66, both of Kiev, all of U.S.S.R.

Filed Jun. 14, 1976, Ser. No. 695,408

Int. Cl.[2] C08L *75/00*

U.S. Cl. 260—859 R **1 Claim**

1. Adhesive composition consisting essentially of the following components in weight parts:

70% solution of oligodiethyleneglycol maleate in styrene	100
product of interacting urethane prepolymer, obtained from toluelenediisocynate and polydiethyleneglycol adipate, with perfluoropentyl alcohol and ethyleneglycol monomethacrylate	50
α- methylbenzoyl	1.

4,119,682

UNSATURATED PHOSPHORUS-CONTAINING CARBOXYLIC ACID DERIVATIVES

Hans-Jerg Kleiner, Kronberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

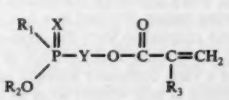
Division of Ser. No. 623,335, Oct. 17, 1975, Pat. No. 4,041,230. This application Nov. 16, 1976, Ser. No. 742,347

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1974, 2449466

Int. Cl.[2] C07F *9/32*

U.S. Cl. 260—952 **3 Claims**

1. A phosphorus-containing compound of the general formula



wherein R_1 and R_2 are alkyl radicals having a total of up to 8 carbon atoms; R_3 is hydrogen or methyl; X is oxygen or sulfur;

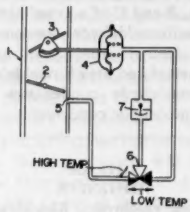
and Y is linear or branched alkylene having up to 6 carbon atoms.

4,119,683

CHOKE BREAKER SYSTEM FOR A CARBURETOR OF AN INTERNAL COMBUSTION ENGINE

Tetsuomi Tamura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 29, 1977, Ser. No. 837,702
Claims priority, application Japan, May 31, 1977, 52-62781
Int. Cl.² F02M *1/10*
U.S. Cl. 261—39 B **8 Claims**



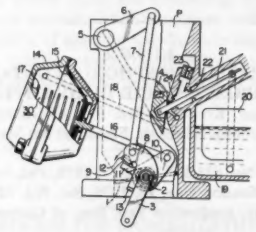
1. A choke breaker system for a carburetor of an internal combustion engine comprising a negative pressure type choke control device directly connected with a vacuum port of a suction tube of the carburetor, a check valve and a vacuum switching valve being controllable in response to an engine temperature are arranged in the passage of the negative pressure formed between said vacuum port of the suction tube and said choke control device, and arrangement of said vacuum switching valve and said check valve is constituted in such a manner that only said vacuum switching valve is to be connected in series when the temperature of the engine is below a certain level, while said vacuum switching valve and said check valve are to be connected in series when the temperature of the engine is in excess of a certain level.

4,119,684

VARIABLE STAGE TYPE CARBURETOR

Kimiji Karino, Katsuta, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 4, 1977, Ser. No. 839,256
Claims priority, application Japan, Oct. 6, 1976, 51-119365
Int. Cl.² F02M *9/08*
U.S. Cl. 261—44 F **1 Claim**



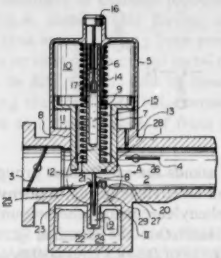
1. A variable stage carburetor having a throttle valve disposed in the intake passage thereof, a vane constituting a variable venturi and disposed at the upstream side of said throttle valve, said vane being operably connected to said throttle valve, fuel metering means disposed in a fuel passage opening in said venturi and adapted to vary the cross-sectional area of said fuel passage in response to the change of opening degree of said vane, and a vane controller adapted to be actuated by the vacuum available at said venturi so as to forcibly displace said vane to a lower opening degree when said throttle valve has been opened nearly to the maximum opening degree to reduce said vacuum at said venturi, characterized by comprising an interlocking spring acting between a limiting lever connected to a diaphragm of said vane controller and an interlocking lever connected to said vane.

4,119,685

VARIABLE VENTURI TYPE CARBURETOR

Takaaki Itoh, and Kazuo Kikuchi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sep. 28, 1977, Ser. No. 837,099
Claims priority, application Japan, Jun. 21, 1977, 52-72895
Int. Cl.² F02M *9/06*
U.S. Cl. 261—44 C **4 Claims**



1. A variable venturi type carburetor of an internal combustion engine, comprising:

a housing;

a bore extending through said housing and having an inner wall defining an intake passage;

a suction piston movable mounted in said housing and having a bottom end face projecting into said intake passage, said bottom end face of said suction piston and said inner wall of said intake passage defining a venturi, said suction piston moving up and down so as to change the cross-sectional area of said venturi in response to a change in the vacuum produced in said intake passage downstream of said venturi for maintaining the velocity of air flowing into said venturi at a constant value;

a jet disposed on the inner wall of said intake passage at a position facing said bottom end face of said suction piston;

a needle fixed onto said bottom end face of said suction piston and entering into said jet, said jet and said needle defining an annular opening through which fuel is injected into said intake passage;

a fuel reservoir in said housing;

a fuel supply passage disposed in said housing and communicating said fuel reservoir with said jet;

at least one first member made of magnetic material attached to the bottom end face of said suction piston; and

at least one second member made of magnetic material attached to said inner wall of said venturi at the positions corresponding to the positions of said at least one first member, said first and second members magnetically contacting each other when said suction piston is in the position in which the cross-sectional area of said venturi is minimum.

4,119,686

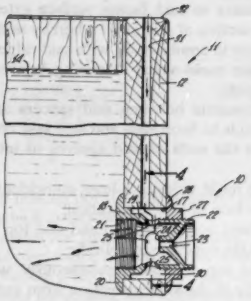
HYDRO-JET FITTING FOR HOT TUB

William W. Conger, IV, Los Osos, Calif., assignor to California Cooperage, San Luis Obispo, Calif.

Filed Oct. 3, 1977, Ser. No. 838,878
Int. Cl.² A61H *33/02*
U.S. Cl. 261—77 **4 Claims**

1. In the combination of a hydro-jet fitting and a tub, the tub including a side wall consisting of a plurality of thin, uniform staves, one of said staves having a laterally-extending hole

therein, said fitting being positioned in said hole in said one stave and being connectable to a source of water for conducting water into said tub, said fitting including a body having a central portion extending through said hole in said one stave, said body having an air inlet and said fitting including a venturi for drawing air into said body from said air inlet and mixing said air with said water, the improvement wherein:



at least some of said central portion of said body is spaced from the surface of said hole in said one stave so as to define an enclosed chamber between said body and said hole surface, said air inlet communicating with said chamber; and wherein:

said one stave of said side wall of said tub has a continuous air passageway extending therethrough, from adjacent the top thereof to said chamber, for conducting air to said fitting.

4,119,687

PROCESS FOR THE PRODUCTION OF POWDER-FORM HYDROLYZED ETHYLENE/VINYL ACETATE COPOLYMERS

Raoul Resz, Bergisch-Gladbach; Herbert Bartl, Odenthal-Hahnenberg; Karl Nöthen, Leverkusen; Joachim Priemer, Odenthal-Hahnenberg, and Aziz El-Sayed, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Mar. 14, 1977, Ser. No. 777,331

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1976, 2611548

Int. Cl.[2] B01J *2/06*

U.S. Cl. 264—9 **11 Claims**

1. A process for producing powdered ethylene/vinyl acetate copolymer which is partically or completely hydrolyzed, said copolymer before hydrolysis containing ethylene and vinyl acetate in copolymerized form in a molar ratio of from 1:2 to 20:1 and having at least 50 mol% of its acetoxy groups hydrolyzed, said process comprising passing an organic solvent solution of hydrolyzed copolymer, which gels at a temperature of from 20 to 80° C., at a temperature at least 5° about the gelation temperature through jets having a cross-section of from 4 to 400 mm at a rate of flow of from 0.01 to 5m/second into water which is at a temperature below but no more than 20° C. below the gelation temperature of the copolymer solution and which is free of surface-active substances, converting the solution thusly introduced into said water into particles of from 0.02 to 5mm in diameter by the application of high shearing force and removing adhering organic solvent by steam distillation.

4,119,688

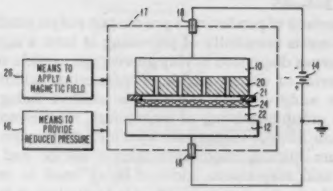
ELECTRO-LITHOGRAPHY METHOD

Hiroyuki Hiraoka, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 628,266, Nov. 3, 1975, abandoned. This application Jun. 17, 1977, Ser. No. 807,601

Int. Cl.[2] H01J *37/31*

U.S. Cl. 264—22 **8 Claims**



1. An electro-lithographic method adapted to form a pattern of high resolution in an electron sensitive resist material comprising the steps of:

applying a layer of E-beam resist onto an anode,

placing a platelike opaque cathode parallel to said anode and facing said layer of resist to form a first gap therebetween,

placing a mask in said first gap between said cathode and said resist layer to form a second gap having a thickness of 10^{-4}m to 10^{-5}m between said mask and said resist layer,

regulating the pressure to 10^{-3} to 10^{-7} torr between said electrodes by pump means to provide an environment suitable for the formation of secondary electrons, and

applying a pulsed electric field of at least 2 KV to said cathode whereby secondary electrons from said cathode pass through the mask and are collimated to form a high resolution mask image in said resist layer.

4,119,689

SINTERING OF SILICON NITRIDE USING Be ADDITIVE

Svante Prochazka, Ballston Lake; Charles D. Greskovich, Schenectady; Richard J. Charles, Schenectady, and Robert A. Giddings, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,085

Int. Cl.[2] C04B *35/58, 35/64*

U.S. Cl. 264—65 **5 Claims**

1. A method of producing a pre-shaped polycrystalline body which consists essentially of providing at least a significantly homogeneous dispersion having an average particle size which is submicron of silicon nitride and a beryllium additive, said beryllium additive being selected from the group consisting of beryllium, beryllium carbide, beryllium fluoride, beryllium nitride, beryllium silicon nitride and mixtures thereof, said beryllium additive being used in an amount wherein the beryllium component is equivalent to from about 0.1% by weight to about 2% by weight of elemental beryllium based on the amount of silicon nitride, shaping said dispersion into a green body and sintering said green body at a temperature ranging from about 1900° C. to about 2200° C. in a sintering atmosphere of nitrogen, said nitrogen being at a superatmospheric pressure which at said sintering temperatures prevents significant thermal decomposition of said silicon nitride and produces a sintered body with a density of at least about 80% of the theoretical density of silicon nitride, the minimum pressure of said nitrogen ranging from about 20 atmospheres at a sintering temperature of 1900° C. to a minimum pressure of about 130 atmospheres at a sintering temperature of 2200° C.

4,119,690

SINTERING OF SILICON NITRIDE USING MG AND BE ADDITIVES

Svante Prochazka, Ballston Lake; Charles D. Greskovich, Schenectady; Richard J. Charles, Schenectady, and Robert A. Giddings, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1977, Ser. No. 756,086
Int. Cl.[2] C04B 35/58, 35/64
U.S. Cl. 264—65 8 Claims

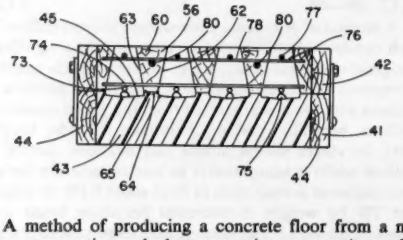
1. A method of producing a pre-shaped polycrystalline body which consists essentially of providing at least a significantly homogeneous dispersion having an average particle size which is submicron of silicon nitride, a magnesium additive and a beryllium additive, said magnesium additive being selected from the group consisting of magnesium, magnesium carbide, magnesium nitride, magnesium cyanide, magnesium fluoride, magnesium silicide, magnesium silicon nitride and mixtures thereof, said magnesium additive being used in an amount wherein the magnesium component is equivalent to from about 0.5% by weight to about 4% by weight of elemental magnesium based on the amount of silicon nitride, said beryllium additive being selected from the group consisting of beryllium, beryllium carbide, beryllium fluoride, beryllium nitride, beryllium silicon nitride and mixtures thereof, said beryllium additive being used in an amount wherein the beryllium component is equivalent to from about 0.1% by weight to about 2% by weight of elemental beryllium based on the amount of silicon nitride, shaping said dispersion into a green body and sintering said green body at a temperature ranging from about 1800° C. to about 2200° C. in a sintering atmosphere of nitrogen, said nitrogen being at a superatmospheric pressure which at said sintering temperature prevents significant thermal decomposition of said silicon nitride and produces a sintered body with a density of at least about 80% of the theoretical density of silicon nitride, the minimum pressure of said nitrogen ranging from about 10 atmospheres at a sintering temperature of 1800° C. to a minimum pressure of about 130 atmospheres at a sintering temperature of 2200° C.

4,119,691

METHOD AND MOLD FOR PRODUCING CONCRETE SLOTTED FLOOR

Paul J. Nobbe, R.R. 2, Brookville, Ind. 47012

Continuation of Ser. No. 542,167, Jan. 20, 1975, abandoned, which is a division of Ser. No. 457,068, Apr. 1, 1974, Pat. No. 3,915,422. This application Jan. 31, 1977, Ser. No. 763,844
Int. Cl.[2] B28B 1/08
U.S. Cl. 264—71 2 Claims



1. A method of producing a concrete floor from a mold having a top section and a bottom section cooperating to form a mold cavity with the floor having integrally connected slats for supporting animals comprising the steps of:

providing the bottom section of said mold having a smooth top surface extending thereacross containing a plurality of elongated, longitudinally extending concave cavities separated by ridges;

providing the top section of said mold including side portions and having downwardly converging, longitudinally extending spacers and side separators positioned outwardly of said spacers on opposite sides of said mold with said spacers, said separators, said side portions and said top section ganged together and mounting said top section simultaneously with said spacers so said spacers rest atop said ridges of said bottom section, said spacers and said separators vertically extending from said ridges to the uppermost surface of said top section and said spacers extending laterally from cavity to cavity covering said ridges except at ends of said spacers, each of said separators having an inwardly facing surface diverging from said spacers as said facing surface extends toward said bottom section of said mold whereby said spacers and said separators in combination with said ridges define a plurality of slat mold voids extending between cross portion mold voids;

pouring concrete between said spacers and into said slat mold voids to form slats and into said cross portion mold voids at the ends of said spacers to integrally join said slats;

filling said mold voids to a level coincident with the uppermost surface of said top section;

vibrating said bottom section and said top section;

allowing said concrete to solidify;

lifting said top section simultaneously with said spacers upwardly in the same direction from and off said bottom section and simultaneously with said side portions and said side separators in same direction allowing said separators and said spacers to move as part of and with said top section;

removing the solidified concrete from said bottom section; and

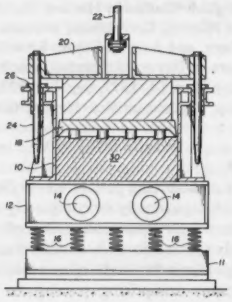
turning the solidified concrete over without said mold so the concrete in contact with said smooth top surface faces upwardly.

4,119,692

PROCESS AND APPARATUS FOR MANUFACTURING CARBON ELECTRODES

René Durinck, Villeneuve d'Ascq, France, assignor to Fives-Cail Babcock, Paris, France

Continuation-in-part of Ser. No. 644,876, Dec. 29, 1975, abandoned. This application Feb. 10, 1977, Ser. No. 767,490
Claims priority, application France, Dec. 31, 1974, 74 43372
Int. Cl.[2] B28B 1/10
U.S. Cl. 264—71 5 Claims



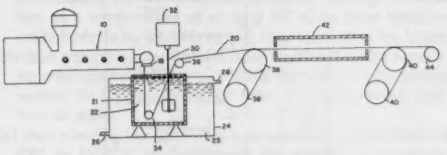
1. A process of manufacturing carbon electrodes from a pasty mass, wherein the pasty mass is placed into a mold having an open top, the mold being integral with a vibrating table and the table, mold and pasty mass constituting a vibrating assembly, maintaining the assembly at a frequency of natural vibrations, and closing the open top of the mold with a cover resting on the pasty mass in the mold, the improvement comprises the step of applying to the table vibrations of a frequency which is 1.1 to 1.6 times the frequency of the natural vibrations.

4,119,693

PROCESS FOR SPINNING POLY (ETHYLENE OXIDE) MONOFILAMENT

Richard Joseph Hartigan, Jr., Delmar, N.Y., assignor to Albany International Corp., Albany, N.Y.

Division of Ser. No. 608,666, Aug. 28, 1975. This application Jun. 6, 1977, Ser. No. 803,561
Int. Cl.[2] D01D *5/08*
U.S. Cl. 264—178 F 4 Claims



1. A process for making poly (ethylene oxide) homopolymer monofilaments, which comprises:

providing apparatus for thermally plasticizing and shaping said homopolymer into a monofilament, which comprises an extruder having a feed zone, a heating zone, a shaping zone and means for passing said homopolymer in successive stages through each of said zones, said zones being interconnected;

feeding said homopolymer to said feed zone;

continuously passing the fed homopolymer to the heat zone, said heat zone being maintained at a temperature above the first order phase transition temperature of said homopolymer, whereby said homopolymer is thermally plasticized;

continuously passing the plasticized homopolymer to the shaping zone wherein said homopolymer is shaped in the form of a monofilament;

continuously passing the shaped homopolymer into a quench bath which comprises a saturated aqueous solution of potassium carbonate maintained at a temperature within the range of from 70° F. to 90° F. whereby the shaped homopolymer is fixed in the form of an unoriented monofilament;

removing said unoriented monofilament from the quench bath;

heating the unoriented monofilament to a temperature between the first and second order phase transition temperatures of said homopolymer;

stretching the heated unoriented monofilament to orient the molecules therein; and

allowing the oriented monofilament to cool to ambient temperatures; said homopolymer having a molecular weight within the range of from 400,000 to 900,000.

4,119,694

METHOD OF MOLDING FRANGIBLE TARGETS

Roland Vernon Manning, Salt Lake City, Utah, assignor to Manning Target Systems Inc., Salt Lake City, Utah

Division of Ser. No. 617,321, Sep. 29, 1975, Pat. No. 4,035,126, and Ser. No. 450,660, Mar. 13, 1974, abandoned. This application Mar. 7, 1977, Ser. No. 774,801
Int. Cl.[2] B29C *3/02*
U.S. Cl. 264—297 5 Claims

1. A method for producing frangible targets comprising:

positioning a female die on a continuous belt mounted for movement around a support surface in a loop;

advancing said belt intermittently around said loop so that said female die is positioned for an interval at selected locations in the following sequence:

a filling station with said die located atop said loop,

a target forming station with the female die located atop said loop, and

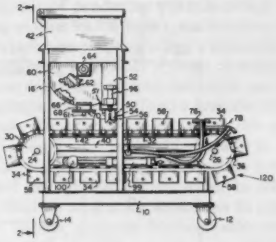
a target discharge station with said female die oriented to discharge its contents;

filling said female die carried by said continuous movable belt with a metered charge of melt comprising a mixture of part pitch and filler at said filling station;

moving said belt so that the female die filled with said melt is positioned at the target forming station below a male die;

mating said female die with said male die;

exerting a pressure on said melt in said female die;



passing a coolant through said female die wherein the coolant received by said female die is approximately the same temperature whereby said melt is cooled at an essentially constant rate to a temperature below the melt's solidifying temperature; and

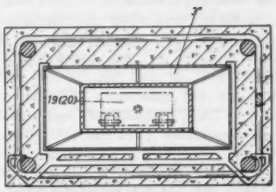
removing said solidified melt which is now in the form of a molded target from said female die at said target discharge station by orienting said female die to permit said molded target to drop out of said female die.

4,119,695

METHOD AND APPARATUS FOR FORMING HOLLOW CONCRETE ELEMENTS

Rolf Arne Conrad Asserback, Kungsportsavenyn 23, S-411 36 Goteborg, Sweden

Filed May 25, 1977, Ser. No. 800,572
Claims priority, application Sweden, May 25, 1976, 7606017
Int. Cl.[2] B28B *7/32*
U.S. Cl. 264—314 8 Claims

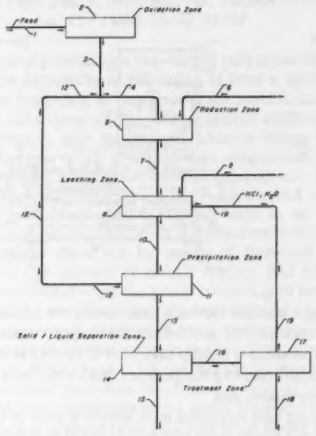


1. An improved method of manufacturing in horizontal moulds elongate concrete structural members formed internally with at least one longitudinal channel, comprising the steps of introducing into the mould in a horizontally extending direction a double-wall hose of an elastic and flexible material to form said channel the inner wall of said hose being open at least at one end and provided with support walls extending between said hose walls to divide the space between said hose walls into longitudinal chambers, inflating said chambers, casting concrete about said hose, exerting a downward load on said hose by means of weights in the interior of said hose to prevent displacement thereof, and displacing said weights in the longitudinal direction of said hose.

4,119,696
PRODUCTION OF TITANIUM METAL VALUES

William K. Tolley, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 14, 1977, Ser. No. 851,098
Int. Cl.[2] C01G 23/06
U.S. Cl. 423—53 8 Claims



1. A process for the recovery of titanium values from a titanium-bearing source which contains other metal values selected from the group consisting of iron, vanadium, nickel, and chromium, said process comprising:

(a) oxidizing said source at a temperature in the range of from about ambient to about 800° C. to convert iron values contained therein to iron oxide;

(b) subjecting a portion of said oxidized source to a reductive roast at elevated temperatures;

(c) leaching said resultant reduced source with a hydrogen chloride source in a leaching zone at a temperature of from about 80° to about 100° C. to form a leach slurry;

(d) contacting said leached slurry with the remaining portion of said oxidized source containing iron oxides at a temperature in the range of from about 75° to about 105° C. to separate titanium oxides or hydrous oxide;

(e) recovering the separated titanium values;

(f) treating the resultant solution to recover said other metal values and to form a hydrogen chloride source; and

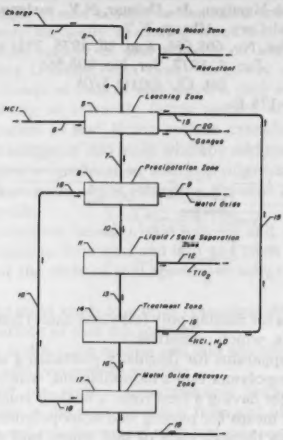
(g) recycling said hydrogen chloride source to said leaching zone.

4,119,697
PRODUCTION OF TITANIUM METAL VALUES

William K. Tolley, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 11, 1977, Ser. No. 814,506
Int. Cl.[2] C01G 23/06
U.S. Cl. 423—82 13 Claims

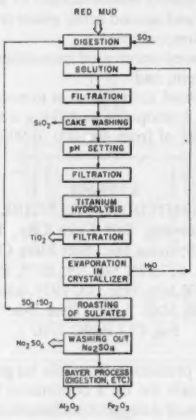
1. A process for the recovery of titanium values from a titanium bearing source which comprises subjecting said titanium bearing source to a reduction roast, thereafter leaching the reduced source with a hydrogen chloride source in a leaching zone, precipitating the leached titanium bearing source in a precipitation zone by contact at a temperature of from about 75° to about 105° C. with a metal oxide selected from the group consisting of ferric oxide, vanadium pentoxide, vanadium dioxide, chromic oxide, manganese dioxide, and cupric oxide, separating and recovering the resultant precipitated titanium dioxide, treating the spent liquor to form hydrogen chloride and recycling the latter to said leaching zone, and simultaneously forming the metal oxide and recycling thus formed metal oxide to said precipitation zone.



4,119,698
RECLAMATION TREATMENT OF RED MUD

Erich Zimmer, Jülich, Germany; Ahmad Nafissi, Tehran, Iran, and Günther Winkhaus, Königswinter, Germany, assignors to Kernforschungsanlage Julich, Gesellschaft mit beschränkter Haftung, Jülich and Vereinigte Aluminum-Werke Aktiengesellschaft, Bonn, both of, Germany

Continuation-in-part of Ser. No. 854,078, Nov. 23, 1977, abandoned. This application Mar. 6, 1978, Ser. No. 884,014
Claims priority, application Fed. Rep. of Germany, Nov. 26, 1976, 2653762
Int. Cl.[2] C01G 23/06; C01F 7/06
U.S. Cl. 423—82 2 Claims



1. A process for treatment of the red mud residue of the Bayer process extraction of aluminum from bauxite comprising the steps of:

(a) heating the red mud to a temperature in the range of 250° to 350° C and then sulfating it with addition of a substance selected from the group consisting of concentrated sulfuric acid and sulfur trioxide, and mixtures of sulfuric acid

and sulfur trioxide in such quantity that after a reaction time of at most one hour the principal red mud metallic components, aluminum, iron, titanium, sodium and calcium are present mainly as sulfates;

(b) then leaching the sulfates with water out of the mass formed in the previous step, to produce a sulfate solution, and separating the solution from the solid residue consisting largely of SiO_2;

(c) then adjusting the pH to a value corresponding to approximately 1.0 at 20° C, and thereafter heating the solution to a temperature of at least 90° C to form titanium oxide hydrate by hydrolysis and then separating the latter;

(d) then separating the sulfates from the water of the remaining solution by either evaporating the water or by adding acetone to precipitate sulfate from an acetone-water mixture or both;

(e) then roasting the sulfates at a temperature in the range of 900° to 1000° C to decompose the sulfates of aluminum and iron by giving off a mixture of SO_2 and SO_3 and forming the corresponding oxides;

(f) then dissolving the sodium sulfate by leaching it out with water and thereby separating it from the oxides of iron and aluminum, and

(g) separating the residual oxides of aluminum and iron from each other by the Bayer process.

4,119,699

METHOD FOR WET METALLURGICAL PROCESSES

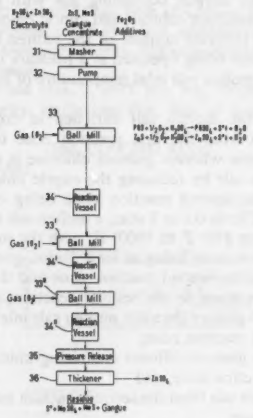
Hans Kellerwessel, Aachen, Germany; Ernst Kausel, Lima, Peru, and Reinhard Nissen, Cologne, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Jul. 29, 1976, Ser. No. 709,922

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1975, 2533755

Int. Cl.[2] C01G *9/06;* C22B *3/02, 5/00*

U.S. Cl. 423—109 **6 Claims**



1. The method of conducting a wet metallurgical process on a sulphidic mineral substance with oxygen and sulphuric acid as reactants to form metal sulphates and elemental sulphur which comprises placing the substance and the reactants in an oscillating container having therein freely movable mixing and grinding bodies, heating the contents of the container above the melting point of sulphur, subjecting the container and contents to high energy oscillations which mix the reactants and substance to form a suspension while grinding the substance, whereby the liquid sulphur is separated from the unleached substance particles and fresh reactable mineral substance surfaces are brought into contact with the reactants.

4,119,700

PRODUCTION OF PHARMACEUTICAL BARIUM SULPHATE

Dennis W. J. Stone, 253 Westcroft Ave., Beaconsfield, P.Q., Canada

Continuation-in-part of Ser. No. 699,325, Jun. 24, 1976, abandoned. This application Oct. 12, 1977, Ser. No. 841,607

Int. Cl.[2] C01F *11/46*

U.S. Cl. 423—156 **7 Claims**

1. A process capable of producing pharmaceutical barium sulphate containing at least 99.7% $BaSO_4$ and less than 10 ppm of heavy metals, which comprises grinding a naturally occurring barite ore containing individual crystals of substantially pure barium sulphate together with iron carbonate and silica as the predominant gangue minerals to form a granular ore material having a particle size of −35 mesh, passing this granular ore through a high intensity wet magnetic separator to remove magnetic particles, leaving a non-magnetic fraction containing barium sulphate and low specific gravity minerals, subjecting the non-magnetic fraction to gravity separation to separate a substantially pure barium sulphate fraction, subjecting this barium sulphate fraction to further grinding in an attrition mill with a particulate grinding medium which is non-contaminating of the pure barium sulphate to form a finely divided barium sulphate having a maximum particle size in the order of about 1 micron, leaching the finely divided barium sulphate fraction with a mineral acid selected from the group consisting of hydrochloric and sulphuric acid to remove acid soluble impurities and washing the leached product.

4,119,701

NO_x REDUCTION CATALYST FOR INTERNAL COMBUSTION ENGINE EMISSION CONTROL

Robert J. Fedor, Westlake, and Cameron S. Ogden, Hudson, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 524,771, Nov. 18, 1974, Pat. No. 4,006,105, which is a continuation-in-part of Ser. No. 441,504, Feb. 11, 1974, abandoned, Ser. No. 451,032, Mar. 22, 1974, abandoned, Ser. No. 453,567, Mar. 22, 1974, abandoned, Ser. No. 457,101, Apr. 1, 1974, abandoned, Ser. No. 460,742, Apr. 15, 1974, abandoned, Ser. No. 460,786, Apr. 15, 1974, abandoned, Ser. No. 460,787, Apr. 15, 1974, abandoned, Ser. No. 461,436, Apr. 15, 1974, abandoned, Ser. No. 466,737, May 3, 1974, abandoned, Ser. No. 466,965, May 6, 1974, abandoned, and Ser. No. 467,106, May 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 207,338, Dec. 13, 1971, abandoned, Ser. No. 207,284, Dec. 13, 1971, abandoned, Ser. No. 207,337, Dec. 13, 1971, abandoned, Ser. No. 207,303, Dec. 13, 1971, abandoned, Ser. No. 240,028, Mar. 31, 1972, abandoned, Ser. No. 240,029, Mar. 31, 1972, abandoned, Ser. No. 240,091, Mar. 31, 1972, abandoned, Ser. No. 240,090, Mar. 31, 1972, abandoned, Ser. No. 240,092, Mar. 31, 1972, abandoned, Ser. No. 207,281, Dec. 13, 1971, abandoned, Ser. No. 207,525, Dec. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 149,331, Jun. 2, 1971, abandoned. This application Jul. 9, 1976, Ser. No. 704,019

The portion of the term of this patent subsequent to Jul. 13, 1993, has been disclaimed.

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—213.2 **28 Claims**

1. In the process of reducing the nitrogen oxide content of the exhaust gases from an internal combustion engine wherein the exhaust gases are contacted with an NO_x reduction catalyst to chemically reduce oxides of nitrogen, the improvement comprising using at the NO_x reduction catalyst a catalytic structure having high NO_x reducing activity and structural durability in the presence of said exhaust gases at temperatures up to 1900° F. consisting essentially of an expanded metal foil reinforcing member having a plurality of strands defining openings therebetween which retains its strength and oxidation

resistance at temperatures in excess of about 1100° F. and up to about 1900° F. and a metallic catalytic surface layer comprising an NO_x reducing catalyst material metallurgically bonded to said reinforcing member.

4,119,702

PROCESS FOR ABATING CONCENTRATION OF NITROGEN OXIDES IN COMBUSTION FLUE GAS

Shigeru Azuhata; Hideo Kikuchi, both of Hitachi; Hidetoshi Akimoto, Tokaimura; Yukio Hishinuma, and Yoshijiro Arikawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 21, 1977, Ser. No. 817,745
Claims priority, application Japan, Jul. 28, 1976, 51-89176
Int. Cl.² C01B *21/00*
U.S. Cl. 423—235 **7 Claims**

1. A process for abating concentration of nitrogen oxides in a combustion flue gas which comprises adding urea and an oxidizing agent for decomposition of urea, said oxidizing agent selected from the group consisting of ozone, nitric acid, hydrogen peroxide, chlorine, chlorine dioxide, perchloric acid, sodium chlorate, sodium chlorite, and sodium hypochlorite, to a combustion flue gas containing nitrogen oxides, thereby reducing the nitrogen oxides in a gaseous phase in the absence of a solid catalyst, the reduction of the nitrogen oxides taking place at a temperature in the range of 200° to 800° C.

4,119,703

PROCESS FOR REMOVAL OF NITROGEN OXIDES FROM WASTE GAS

Fusao Nishida, Tokyo; Tomiaki Yamada, Yokohama; Noriyuki Suzuki, Tokyo; Takehiko Takeda, Yokohama; Tsutomu Yanagihara, Tokyo; Katsuhiko Adachi, Yokohama; Tadashi Asanabe, Tokyo; Katuaki Ohsato, Yokohama, and Kintaro Tsuda, Tokyo, all of Japan, assignors to Japan Gasoline Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 584,912, Jun. 9, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 777,016
Int. Cl.² B01D *53/00*
U.S. Cl. 423—239 **6 Claims**

1. A process for the reductive removal of nitrogen oxides from waste gas containing said oxides in conjunction with sulfur oxides which cmprises contacting said waste gas having a GHSV of from 1000 to 50,000 HR^{-1} with ammonia at a termperature of from 250° to 500° C. in the presence of a catalyst, the active component of which is selected from the group consisting of oxides and sulfates of iron and copper and mixtures thereof, the catalyst being supported on a silica-alumina type carrier containing at least 60% by weight of silica, the amount of the active component being from 0.5 to 20% by weight based on the weight of the carrier, the pore volume of the catalyst occupied by pores measuring at least 150 A in diameter being from 0.15 cc/g to 0.5 cc/g, the total pore volume of the catalyst being at least 0.5 cc/g and the specific surface area of the catalyst being at least 50 m^2/g.

4,119,704

PROCESS FOR MAKING GALLIUM ARSENIDE OR PHOSPHIDE

Herbert Jacob, Burghausen; Michael Blatte, Emmerting, and Fritz Kremser, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Continuation of Ser. No. 652,261, Jan. 26, 1976, abandoned. This application Aug. 28, 1977, Ser. No. 827,059
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1975, 2506265
Int. Cl.² C01B *25/00;* C22C *28/00, 30/00*
U.S. Cl. 423—299 **7 Claims**

1. A process for producing gallium arsenide or phosphide comprising the steps of:

(a) forming an intimate mixture of liquid metallic gallium and either arsenic or red phosphorus, in substantially stoichiometric proportions;

(b) grinding said mixture at a temperature between 30° C and about 60° C to attain a pasty consistency for a period of time to induce formation of gallium arsenide or phosphide;

(c) tempering the ground mixture by heating at a temperature between about 200° C and about 400° C below the sublimation point of the arsenic or the red phosphorus; and

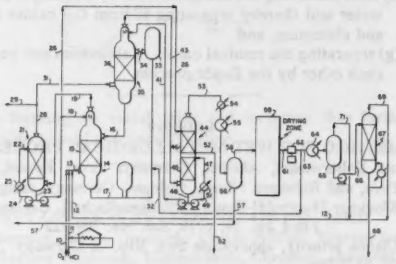
(d) recovering the gallium arsenide or phosphide.

4,119,705

PRODUCTION OF CHLORINE

Herbert Riegel, Maplewood, and Vincent A. Strangio, Glen Ridge, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Apr. 6, 1977, Ser. No. 785,286
Int. Cl.² C01B *7/04*
U.S. Cl. 423—507 **12 Claims**



1. A process for oxidizing hydrogen chloride to chlorine, comprising:

contacting in a first reaction zone gaseous hydrogen chloride and an oxygen containing gas with a molten salt mixture containing cuprous and cupric chloride to enrich the cupric chloride content of the molten salt, said first reaction zone being operated at a pressure of from 1.1 to 10 atm., a molten salt inlet temperature of from 780° F to 880° F;

introducing the molten salt enriched in cupric chloride withdrawn from the first reaction zone into a second reaction zone wherein gaseous chlorine is stripped from the molten salt by reducing the cupric chloride content thereof, the second reaction zone being operated at a pressure of from 0.1 to 2 atm., a molten salt inlet temperature of from 840° F to 1000° F, with the pressure of the first reaction zone being at least 1 atm. greater than the pressure in the second reaction zone and the molten salt inlet temperature to the second reaction zone being at least 60° F greater than the molten salt inlet temperature to the first reaction zone;

recovering a gaseous effluent containing chlorine from the second reaction zone; and

passing molten salt from the second reaction zone to the first reaction zone.

4,119,706

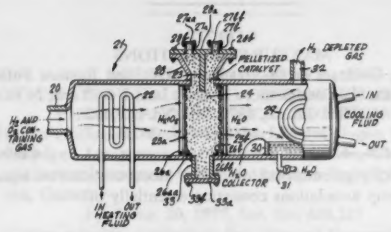
METHOD OF CATALYTICALLY RECOMBINING RADIOLYTIC HYDROGEN AND RADIOLYTIC OXYGEN

William M. Rogers, Alameda, Calif., assignor to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Oct. 12, 1976, Ser. No. 731,692
Int. Cl.² B01D *53/34;* C01B *5/00*
U.S. Cl. 423—580 **7 Claims**

1. A method of treating the condenser off-gases of a boiling water nuclear reactor wherein said off-gases contain a major amount of steam or water vapor and minor amounts of radiolytic hydrogen and radiolytic oxygen together with minor

amounts of air and radioactive gases which comprises introducing said off-gases into contact with a mass of particle-form catalytic material disposed within a reaction zone, said mass of particle-form catalytic material occupying the complete cross-section of a length of said reaction zone, said particle-form catalytic material effecting the catalytic reaction of hydrogen and oxygen to produce water vapor, maintaining said mass of particle-form catalytic material substantially filling or occupying the complete cross-section of said reaction zone along a



length of said reaction zone by maintaining a reservoir of said particle-form catalytic material above said reaction zone and in open communication therewith so that as said particle-form catalytic material becomes depleted from or otherwise leaves said reaction zone additional particle-form catalytic material moves or falls by gravity via at least two substantially independent flowpaths into said reaction zone to maintain said reaction zone completely filled with said particle-form catalytic material and cooling the resulting reaction product gases, now substantially depleted with respect to hydrogen and oxygen.

4,119,707

PROCESS AND EQUIPMENT FOR MANUFACTURING VANADIUM PENTOXIDE

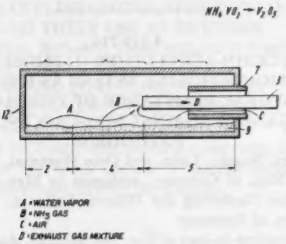
Roland Thome; Hubert Bings, both of Luenen, and Hans Obermaier, Tacherting, all of Fed. Rep. of Germany, assignors to Vereinigte Aluminum-Werke Aktiengesellschaft, Bonn, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,855

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1976, 2609430

Int. Cl.[2] C01G *31/00*

U.S. Cl. 423—592 **13 Claims**



1. A process for the manufacture of vanadium pentoxide in powder form which comprises:

heating a predetermined quantity of ammonium metavanadate composition comprising more than 10% ammonia in a first zone to between about 300° and 500° C. until the water contained in said composition has been substantially removed to form an essentially dry material and water vapor,

conducting said essentially dry composition from said first zone to a second zone,

heating said essentially dry material in said second zone to between about 500° and 600° C. to form vanadium oxides and ammonia in the presence of said water vapor from said first zone,

diluting said ammonia with said water vapor,

conducting said vanadium oxides from said second zone to a third zone,

heating said vanadium oxides in said third zone through which air is flowing in a countercurrent direction to between about 550° and 650° C. to form dry vanadium pentoxide powder, and

continuously performing said process in a single enclosure wherein said first, second and third zones are adjacent to and in open communication with one another.

4,119,708

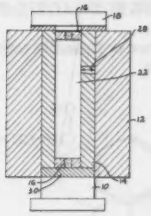
HIGH TEMPERATURE, HIGH PRESSURE PROCESS UTILIZING A DUCTILE DRIVER ELEMENT

George C. Kennedy, Los Angeles, Calif., assignor to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 586,415, Jun. 12, 1975, abandoned. This application Sep. 29, 1976, Ser. No. 727,889

Int. Cl.[2] C01B *31/06*

U.S. Cl. 423—659 **3 Claims**



1. The method of maintaining a desired pressure in a reaction chamber on an electrically heated charge which undergoes reaction and reduces in volume, said method comprising the steps of: lining a portion of the inside walls of the reaction chamber with a sleeve of insulating material, placing said charge in said sleeve and confining said charge and said sleeve axially at one end of the reaction chamber, introducing a ductile electrically conductive driver element and a piston into the reaction chamber so as to axially confine said charge and said sleeve in said reaction chamber, interposing said driver element between said piston and said sleeve, and heating and pressurizing said charge so that as the piston advances towards said charge the driver element will deform at a lower pressure and temperature than said sleeve and flow into the adjacent end of the sleeve, without substantially deformation of said sleeve during the continued advancement of said piston required for said reaction, and sizing the driver element to allow the piston maximum forward travel without substantial deformable engagement with said insulating sleeve while maintaining a substantially constant reaction pressure on the charge.

4,119,709

DIAGNOSTIC TEST

William R. Holub, 138 Shore Rd., Port Washington, N.Y. 11050

Filed Feb. 17, 1976, Ser. No. 658,818

Int. Cl.[2] G01N *33/16*; A61K *43/00*

U.S. Cl. 424—1 **10 Claims**

1. A method of determining the concentration of a substance in a sample fluid by competitive binding, which comprises forming an admixture of a predetermined amount of said sample fluid, a predetermined amount of a radioactive isotope labeled form of said substance, a predetermined amount of a receptor capable of binding the labeled and unlabeled forms of the substance, and a predetermined amount of a particulate solid sorbent coated with a further amount of said receptor,

said sorbent being precoated, before said admixture is formed, with said further amount of receptor, said further amount being at least sufficient to bind all of the labeled substance, allowing the resulting heterogenous liquid phase/solid phase system to equilibrate, said liquid phase comprising said substance bound to the receptor and said radioactive isotype bound to the receptor and said solid phase comprising said coated sorbent to which is bound said substance and said radioactive isotope, separating the liquid phase from the solid phase after equilibration, and counting with a radiation counter the radioactivity of the liquid phase or the solid phase.

4,119,710

BRONCHOSPASMOLYTIC 1-(P-AMINO-PHENYL)-2-AMINO-ETHANOLS-(1) AND SALTS

Günther Engelhardt; Johannes Keck; Gerd Krüger, all of Biberach an der Riss; Klaus-Reinhold Noll, Warthausen-Oberhofen, and Helmut Pieper, Biberach an der Riss, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

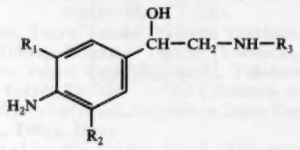
Continuation-in-part of Ser. No. 426,949, Dec. 13, 1973, abandoned. This application Dec. 28, 1976, Ser. No. 754,981

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1972, 2261914; Sep. 8, 1973, 2345442; Oct. 12, 1973, 2351281

Int. Cl.[2] A61K *31/04, 31/135, 31/275, 31/36*

U.S. Cl. 424—282 **7 Claims**

1. A racemic mixture or optically active antipode of a compound of the formula



wherein

R_1 is fluorine, chlorine, bromine, iodine or cyano,

R_2 is trifluoromethyl, nitro or cyano, and

R_3 is alkyl of 3 to 5 carbon atoms, hydroxy(alkyl of 3 to 5 carbon atoms), cycloalkyl of 3 to 5 carbon atoms, 1-(3,4-methylenedioxy-phenyl)-2-propyl or 1-(p-hydroxy-phenyl)-2-propyl,

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

6. A pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective bronchospasmolytic amount of a compound of claim 1.

4,119,711

PIPERIDINO DERIVATIVES

Sven Erik Harry Hernestam; Nils Arne Nilsson; Curt Harry Nordvi, all of Malmö, and Lars-Olof Willard, Höllviksnäs, all of Sweden, assignors to AB Ferrosan, Malmö, Sweden

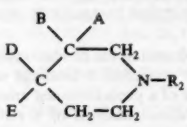
Filed Mar. 11, 1977, Ser. No. 776,903

Claims priority, application United Kingdom, Mar. 18, 1977, 10977/77

Int. Cl.[2] C07D *221/20;* **A61K** *31/445*

U.S. Cl. 424—54 **14 Claims**

1. A piperidine compound of the formula



(I)

wherein A and B each represents a hydrogen atom and D and E together represent a group R_1, R_1 being selected from the group consisting of unsubstituted straight-chain and unsubstituted branched-chain alkylene groups (forming a spiro compound) having 7–16 carbon atoms and R_2 is selected from the group consisting of unsubstituted straight-chain and unsubstituted branched-chain hydroxyalkyl groups having 2–10 carbon atoms, and acid addition salts thereof.

11. An oral and dental hygiene composition suitable for use in the treatment of dental caries and periodontitis, comprising a compound of claim 1, in an amount effective for said purpose, in association with an orally acceptable carrier.

4,119,712

MAKEUP FOUNDATIONS

Tibor G. Goldner, Fresh Meadows, N.Y., and Eustace Fotiu, Mahwah, N.J., assignors to Revlon, Inc., New York, N.Y.

Filed Jul. 25, 1977, Ser. No. 818,432

Int. Cl.[2] A61K *7/021, 7/035*

U.S. Cl. 424—63 **3 Claims**

1. A dry pigment composition for incorporation into aqueous makeup foundations consisting essentially of

talc	50–90%,
cosmetically acceptable pigment	5–49%,
hydrophilic fumed silica	0.5–3%, and
hydrophobic fumed silica	0.5–5%

4,119,713

ANALGESIC AND ANTI-INFLAMMATORY COMPOSITION

Sam Carosio, 111 West St., Englewood, N.J. 07631

Filed Feb. 9, 1977, Ser. No. 767,140

Int. Cl.[2] A61K *35/12, 35/56, 31/355, 31/05*

U.S. Cl. 424—95 **5 Claims**

1. An analgesic and anti-inflammatory composition for external application comprising in synergistic combination by weight:

from about 0.16 to about 0.26 percent of menthol;

from about 36 to about 60 percent of whole eggs;

a concentration of vitamin E from about 2050 to about 3450 international units per kilogram of total composition weight;

from about 0.16 to about 0.26 percent of substantially purified honey; and

a pharmacentically acceptable diluted alcohol solvent to make 100 percent.

4,119,714

GLYCERIN-ALKYLETHER-(1)-PHOSPHORIC ACID-(3)-MONOCHOLINE ESTERS AS ENHANCERS OF THE NATURAL RESISTANCE OF THE MAMMALIAN ORGANISM AGAINST NON-CARCINOGENIC PATHOGENS

Gunter Kny, Nassau, Lahn, and Otto Westphal, Freiburg, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V., Gottingen, Fed. Rep. of Germany

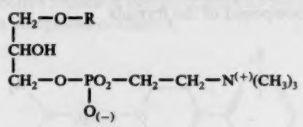
Continuation-in-part of Ser. No. 565,553, Apr. 7, 1975, abandoned, which is a continuation of Ser. No. 396,553, Sep. 12, 1973, abandoned, which is a continuation of Ser. No. 118,085, Feb. 23, 1971, abandoned. This application Jan. 26, 1977, Ser. No. 762,572

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1970, 2009342

Int. Cl.[2] A61K *31/685, 31/66*

U.S. Cl. 424—199 **4 Claims**

1. The method of increasing the immune response of the organism of a warm-blooded animal to a non-carcinogenic, antigenic stimulus, which comprises adminstering to said animal an effective immune response increasing amount of a compound of the formula



wherein R is alkyl of 12 to about 20 carbon atoms.

4,119,715
PESTICIDALLY ACTIVE O-(1-FLUORO-2-HALOGENO-ETHYL)-THIONOPHOSPHORIC (PHOSPHONIC) ACID ESTERS

Hellmut Hoffmann, Wuppertal; Dieter Arlt, Cologne; Bernhard Homeyer, Leverkusen, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

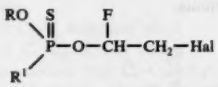
Filed Jun. 20, 1977, Ser. No. 808,227

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1976, 2630561

Int. Cl.[2] A01N *9/36;* **C07F** *9/165, 9/40*

U.S. Cl. 424—216 **9 Claims**

1. An O-(1-fluoro-2-halogeno-ethyl)-thionophosphoric (phosphonic) acid ester of the formula



in which

R is alkyl, phenyl or phenyl carrying up to three substituents selected from the group consisting of halogen, alkyl, alkylthio and nitro,

R^1 is alkyl or alkoxy, and

Hal is halogen.

2. A method of combating arthropods or nematodes which comprises applying to the arthropods or nematodes, or to a habitat thereof, an arthropodicidal or nematicidally effective amount of a compound according to claim 1.

4,119,716
CERTAIN DIARYLDITHIOPHOSPHORODIAMIDATES AND THEIR USE AS BIOCIDES

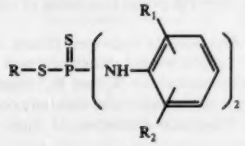
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 27, 1977, Ser. No. 819,653

Int. Cl.[2] A01N *9/36;* **C07F** *9/24*

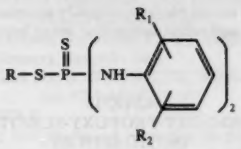
U.S. Cl. 424—220 **152 Claims**

1. A method for controlling bacteria comprising applying to the bacteria or the locus thereof a bactericidally effective amount of a compound having the formula



in which R is lower alkyl, phenyl, benzyl or p-chlorophenyl and R_1 and R_2 are halo, lower alkyl, trifluoromethyl, cyano, nitro, thicyano or hydrogen, provided that at least one of R_1 and R_2 is other than hydrogen, and further provided that if R_1 or R_2 is cyano, R is methyl or p-chlorophenyl.

29. A compound having the formula



in which R is lower alkyl, phenyl, benzyl or p-chlorophenyl and R_1 and R_2 are halo, lower alkyl, trifluoromethyl, cyano, nitro, thiocyano or hydrogen, provided that at least one of R_1 and R_2 is other than hydrogen, and further provided that if R_1 or R_2 is cyano, R is methyl or p-chlorophenyl.

4,119,717
16-S-ACYL DERIVATIVES OF FUSIDIC ACID

Welf von Daehne, Rungsted Kyst, and Poul Rødbroe Rasmussen, Frederikssund, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

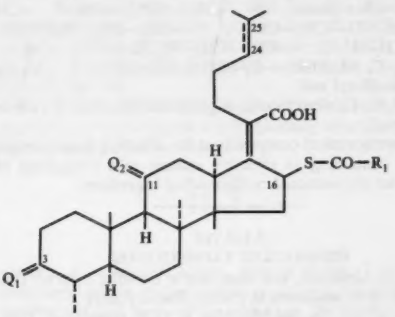
Filed Jun. 14, 1977, Ser. No. 806,376

Claims priority, application United Kingdom, Jul. 5, 1976, 27921/76

Int. Cl.[2] A61K *31/56*

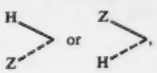
U.S. Cl. 424—238 **30 Claims**

1. A compound of the formula I



I

in which the dotted line between C-24 and C-25 indicates that the carbon atoms in question are connected by either a double bond or a single bond and in which Q_1 represents oxygen or one of the groupings



Z being a hydroxy group, a halogen atom, a methylsulfonyloxy or p-tolylsulfonyloxy group, an azido or a nitro group, Q_2 is oxygen or the grouping

and R_1 stands for a straight or branched alkyl radical having from 1 to 6 carbon atoms, a phenyl or a heterocyclyl radical having 5 or 6 ring atoms and containing nitrogen, oxygen and/or sulfur atoms, these radicals being optionally substituted with, nitro, lower alkyl radicals; or pharmaceutically acceptable, non-toxic salt or easily hydrolyzable ester thereof.

15. A pharmaceutical preparation in dosage unit form for the enteral or parenteral treatment of patients suffering from infectious diseases, which comprises as an active ingredient at least one compound according to claim 1, or a pharmaceutically

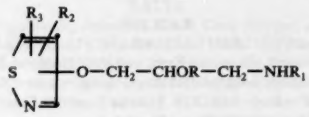
acceptable, non-toxic salt or an easily hydrolysable ester thereof, and an atoxic pharmaceutically acceptable carrier, the quantity of the said active compound being between 0.05 g and 1 g.

4,119,718
3-AMINO-2-OXY-PROPOXY-SUBSTITUTED ISOTHIAZOLES

John J. Baldwin, and Gerald S. Ponticello, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 2, 1977, Ser. No. 792,743
Int. Cl.[2] A61K *31/425;* **C07D** *275/02*
U.S. Cl. 424—248.51 **18 Claims**

1. Compounds having the formula



and pharmaceutically acceptable salts thereof wherein

R is hydrogen, benzoyl, naphthoyl, p-methylbenzoyl, p-phenylbenzoyl or C_2–C_{12} alkanoyl,

R_1 is C_1–C_{12} alkyl,

R_2 is H, Cl, Br, F, CN, $—NH_2$, $—COOR_4$ wherein R_4 is H, C_1–C_6 alkyl or C_6–C_{12} carbocyclic aryl, $—CONR_5R_6$ wherein R_5 and R_6, when separate, are H or C_1–C_6 alkyl and, when joined, are $—CH_2—(CH_2)_3—CH_2—$, $—CH—CH_2—O—CH_2—CH_2—$, $—CH_2—CH_2—NH—CH_2—CH_2—$, or $—CH_2—CH_2—N(CH_3)—CH_2—CH_2—$, $—C_1$–C_6 alkylthio, $—C_1$-Chd 6 alkysulfinyl or $—C_1$–C_6 alkylsulfonyl and

R_3 is H, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl or C_1–C_6 alkylsulfonyl.

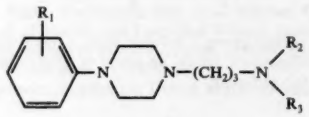
18. Pharmaceutical compositions for effecting β-adrenergic blockade containing an effective amount of a compound of claim **1** and conventional compounding ingredient.

4,119,719
PIPERAZINE COMPOUNDS

Jean-Pierre Maffrand, and Jean-Marie Pereillo, both of Toulouse, France, assignors to Parcor, Paris, France

Division of Ser. No. 664,943, Mar. 8, 1976, abandoned. This application Sep. 14, 1977, Ser. No. 833,291
Claims priority, application France, Apr. 7, 1975, 75 10729
Int. Cl.[2] A61K *31/495, 31/535*
U.S. Cl. 424—250 **19 Claims**

5. A pharmaceutical composition comprising a pharmaceutically acceptable vehicle and a piperazine compound of the formula

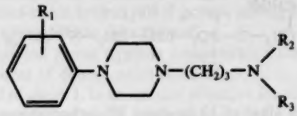


wherein

R_1 is chlorine, alkyl having 1–6 carbon atoms or alkoxy having 1–6 carbon atoms and R_2 and R_3 together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of piperidino and pyrrolidino,

or a pharmaceutically acceptable salt thereof, said piperazine compound being present in an amount sufficient to provide hypocholesterolaemic, anti-inflammatory and analgesic activity.

10. A process for normalizing the cholesterol and lipid levels in the blood of a human patient comprising administering to said patient sufficient dosage units of a pharmaceutical composition comprising a pharmaceutically acceptable vehicle and a piperazine compound of the formula



wherein

R_1 is chlorine, alkyl having 1–6 carbon atoms or alkoxy having 1–6 carbon atoms and R_2 and R_3 together with the nitrogen atom to which they are attached form a heterocycle selected from the group consisting of piperidino and pyrrolidino,

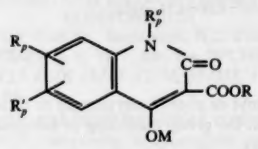
or the pharmaceutically acceptable salts thereof.

4,119,720
UNSATURATED ESTERS OF 4-HYDROXY-2-QUINOLINONE-3-CARBOXYLIC ACIDS AND SALTS THEREOF

Goetz E. Hardtmann, Morristown, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

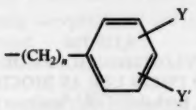
Filed Jul. 6, 1977, Ser. No. 813,267
Int. Cl.[2] A61K *31/47;* **G07D** *215/22*
U.S. Cl. 424—258 **78 Claims**

1. A compound of the formula:



wherein

$R_p{}^o$ is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 3 to 6 carbon atoms, alkynyl of 3 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cycloalkylalkyl in which the cycloalkyl is of 3 to 6 carbon atoms and the alkyl portion is of 1 or 2 carbon atoms, or



n is 0 or 1,

M is hydrogen or a pharmaceutically acceptable cation,

R is alkenyl of 3 to 6 carbon atoms or alkynyl of 3 to 6 carbon atoms,

Y and Y′ are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, trifluoromethyl or nitro, with the proviso that only one of Y and Y′ can be from the group consisting of nitro and trifluoromethyl, and

R_p and R_p' are independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or trifluoromethyl, or R_p and R_p' together form 6,7-methylenedioxy, with the proviso that only one of R_p and R_p' can be from the group consisting of nitro and trifluoromethyl,

with the further proviso that the unsaturation in any alkenyl or alkynyl is on other than the alpha carbon atom.

30. The method of treating allergic conditions due to histamine release comprising administering to a mammal in need of such treatment an allergy treating effective amount of a compound of claim **1**.

60. The pharmaceutical composition comprising in unit

dosage form a pharmaceutically acceptable carrier and an amount effective to relieve allergic conditions due to histamine release of a compound of claim 1.

4,119,721

SUBSTITUTED (3-LOWERALKYLAMINO-2-R_1O-PROPOXY)PYRIDINES, THEIR PREPARATION AND USE

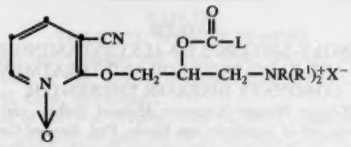
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 696,236, Jun. 15, 1976, Pat. No. 4,053,605. This application Mar. 7, 1977, Ser. No. 774,850

Int. Cl.[2] A61K *31/44;* **C07D** *213/57*

U.S. Cl. 424—263 **3 Claims**

1. A compound having the formula:



wherein

R is C_3–C_4 branched alkyl,

R^1 is C_1–C_4 alkyl or benzyl

L is selected from C_1–C_{10} alkyl, phenyl, mono- and disubstituted phenyl wherein said substituents are independently selected from C_1–C_4 alkyl, C_1–C_4 alkoxy and halo, and

X is halogen.

3. A method of treating hypertension in animals which comprises administering an effective amount of a compound of claim 1.

4,119,722

METHOD FOR CONTROL OF FUNGI USING 4-HALO-5-ARYL-1,2,3,-DITHIAZOLES

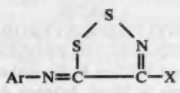
Joseph E. Moore, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 698,383, Jun. 21, 1976, Pat. No. 4,059,590. This application Sep. 26, 1977, Ser. No. 836,283

Int. Cl.[2] C07D *285/06*

U.S. Cl. 424—270 **6 Claims**

1. A method for the control of fungi which comprises applying thereto or their habitats a fungicidally effective amount of a compound of the formula



wherein X is fluoro, chloro, bromo, iodo and Ar is phenyl, naphthyl or phenyl or naphthyl substituted with 1 to 3 of the same or different substituents selected from hydroxy, fluoro, chloro, bromo, iodo, cyano, nitro, benzoyl, formyl alkanoyl of 2 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 2 carbon atoms and 1 to 5 of the same or different halogens selected from fluoro, chloro or bromo, alkoxy of 1 to 4 carbon atoms, phenoxy, or phenoxy substituted with 1 to 2 of the same different substituents selected from fluoro, chloro, bromo, iodo, trifluoromethyl, trichloromethyl, nitro, cyano or alkyl of 1 to 4 carbon atoms.

4,119,723

TREATMENT OF RHEUMATOID ARTHRITIS AND RELATED DISEASES

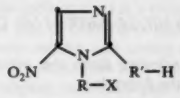
Roger Wyburn-Mason, Richmond Surrey, England, assignor to John R. A. Simoons, Summit, N.J.

Filed Jul. 8, 1977, Ser. No. 813,922

Int. Cl.[2] A61K *31/415*

U.S. Cl. 424—273 R **5 Claims**

1. A method for producing remission in patients suffering from active rheumatoid arthritis which comprises administering orally to such a patient an effective amount of a compound of the formula:



wherein R and R′ are each alkylene having 1 to 7 carbon atoms and X is lower alkylsulfonyl and the pharmaceutically acceptable acid addition salt thereof.

4,119,724

FUNGICIDAL COMPOSITIONS CONTAINING PHOSPHOROUS ACID AND DERIVATIVES THEREOF

André Thizy; Daniel Pillon; Jean-Claude Debourge, and Guy Lacroix, all Lyon, France, assignors to Pepro, France

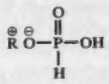
Division of Ser. No. 527,380, Nov. 26, 1974, Pat. No. 4,075,324. This application Apr. 13, 1977, Ser. No. 787,154

Claims priority, application France, Nov. 26, 1973, 73.43801, Sept. 27, 1974 [FR], France—74.33409

Int. Cl.[2] A61L *9/04;* **A01N** *9/36*

U.S. Cl. 424—45 **16 Claims**

1. A method of controlling fungus disease in plants comprising applying to said plants in a fungicidally effective amount at least one salt of the formula



wherein R is triethyl amine, ethanol amine, 1,3-imidazole, cyclohexyl amine, aniline, aniline containing one to three alkyl substituents of 1 to 4 carbon atoms on the aromatic ring or morpholine.

4,119,725

INSECTICIDAL N-METHYLPYRROLIDINONYLACETANILIDES

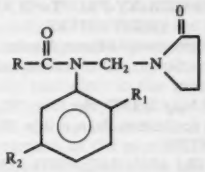
Louis Schneider, Elizabeth, and David E. Graham, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 796,520, May 13, 1977. This application Oct. 25, 1977, Ser. No. 845,273

Int. Cl.[2] A01N *9/22*

U.S. Cl. 424—274 **5 Claims**

1. A method of controlling insect larvae on plants which comprises applying thereto an insecticidally effective amount of a compound which is an N-acyl-N-(N′-methylenepyrrolidonyl)-2,5-dialkylaniline having the formula:



where R_1 and R_2 are both lower alkyl, and R is selected from

the group consisting of alkyl, alkenyl and haloalkenyl having from 2 to 12 carbon atoms.

4,119,726
CYCLIC EXO AMIDES

Gordon Wootton, Sawbridgeworth, England, assignor to Beecham Group Limited, United Kingdom

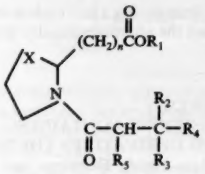
Filed May 13, 1977, Ser. No. 796,715

Claims priority, application United Kingdom, May 22, 1976, 21305/76

Int. Cl.[2] **C07D** *207/24;* **A61K** *31/40;* **C07D** *207/12*

U.S. Cl. 424—274 **29 Claims**

1. A compound selected from the group consisting of a cyclic exoamide of the formula:



wherein

n has a value of 4 to 8;

X is carbonyl; a ketal, thioketal, hemithioketal, oxime, semicarbazone or hydrazone derived from such carbonyl; or C(OH)R in which R is hydrogen or alkyl of 1 to 4 carbon atoms;

R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, phenyl, benzyl or toluyl;

R_3 is hydroxy, acyloxy of 1 to 4 carbon atoms, or benzyloxy;

each of R_2 and R_4 is independently hydrogen, alkyl of 1 to 9 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl, naphthyl, or alkyl of 1 to 6 carbon atoms substituted with cycloalkyl of 5 to 8 carbon atoms, phenyl or naphthyl, said phenyl and naphthyl being unsubstituted or substituted by up to three substituents selected from the group consisting of fluoro, chloro, bromo, trifluoromethyl, alkyl of 1 to 4 carbon atoms, nitro, and alkoxy of 1 to 4 carbon atoms, or R_2 and R_4 taken together with the carbon atoms to which they are commonly bound are cycloalkyl of 5 to 8 carbon atoms; and

R_5 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl,

and the pharmaceutically acceptable non-toxic salts thereof.

28. A pharmaceutical composition for the treatment of gastric acid secretion, bronchodilation and platelet aggregation inhibition activities comprising a compound according to claim 1 in an amount sufficient to overcome such disorders and a pharmaceutically acceptable carrier.

4,119,727
NOVEL 11-DESOXY-PROSTAGLANDIN F_2 DERIVATIVES

Jean Buendia, Le Perreux-sur-Marne; Jeanine Nierat, Suresnes, and Robert Deroy, Sceaux, all of France, assignors to Roussel Uclaf, Paris, France

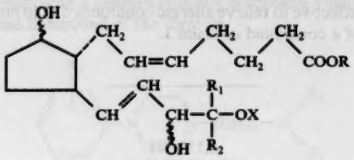
Filed May 2, 1977, Ser. No. 792,563

Claims priority, application France, Apr. 30, 1976, 76 12942; Jan. 18, 1977, 77 01299

Int. Cl.[2] **A01N** *9/00;* **C07D** *333/24*

U.S. Cl. 424—275 **18 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, an alkali metal, an equivalent of an alkaline earth metal, magnesium or a pharmaceutically acceptable amine base, R_1 and R_2 are individually selected from the group consisting of hydrogen and methyl and X is thienyl optionally substituted with at least one member of the group consisting of chlorine, —CN and methyl with the wavy lines indicating that the hydroxy may be in either one of the two possible α and β positions.

4,119,728
1-PHENOXY-2-HYDROXY-3-ALKYNYLAMINO-PROPANES AND SALTS THEREOF AND TREATMENT OF CORONARY DISEASES THEREWITH

Herbert Köppe; Werner Kummer; Helmut Stähle, and Gojko Muacevic, all of Ingelheim am Rhein, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

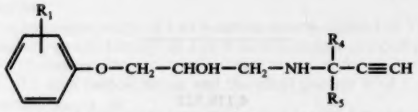
Continuation-in-part of Ser. No. 609,998, Sep. 3, 1975, Pat. No. 4,016,202, which is a continuation-in-part of Ser. No. 444,713, Feb. 22, 1974, Pat. No. 3,925,446. This application Nov. 18, 1976, Ser. No. 742,782

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1973, 2309887; Jan. 26, 1974, 2403809

Int. Cl.[2] **A61K** *31/165;* **C07C** *103/10*

U.S. Cl. 424—324 **7 Claims**

1. A racemic or optically active compound of the formula



wherein

R_1 is —NH—CO—R_9, where R_9 is lower alkyl; or —Q—CO—NR_7R_8, where Q is single bond or —CH_2—, and R_7 and R_8 are each hydrogen or lower alkyl; and

R_4 and R_5 are each alkyl of 1 to 3 carbon atoms;

or a physiologically compatible acid addition salt thereof.

7. The method of treating diseases of the coronaries in a warm-blooded animal, which comprises administering to said animal a safe but effective amount of a compound of claim 1.

4,119,729
ALKYLSULFONYLPHENOXYPROPANOLAMINE THERAPEUTIC PROCESS

William T. Comer, and William E. Kreighbaum, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 722,853, Sep. 10, 1976, Pat. No. 4,067,904, which is a continuation-in-part of Ser. No. 642,638, Dec. 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 455,099, Mar. 27, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,008

Int. Cl.[2] **A01N** *9/20*

U.S. Cl. 424—330 **6 Claims**

1. A process for treating hypertension which comprises systemically administering to a mammal in need of said treatment an antihypertensive effective amount of a compound selected from the group consisting of

1-(phenoxyisopropylamino)-3-[4-(methylsulfonyl)-m-tolyloxy]2-propanol, and
3-[4-(methylsulfonyl)-m-tolyloxy]-1-(2-phenoxyethyl-)amino-2-propanol
or a pharmaceutically acceptable non-toxic acid addition salt thereof.

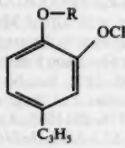
4. A process which comprises systemically administering to a mammal in need of antiarrhythmic treatment an antiarrhythmic effective amount of a compound selected from the group consisting of
1-(isopropylamino)-3-[2-(methylsulfonyl)phenoxy]-2-propanol and
1-[(4-(methoxy-α,α-dimethylphenethyl)amino]-3-[4-(methylsulfonyl)-m-tolyloxy]-2-propanol
or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4,119,730
TREATING MUSCLE SPASMS

Rolf Deininger, Cologne, and Erich Wolf, Overath, Marienlinden, both of Fed. Rep. of Germany, assignors to Chimicasa GmbH, Chur, Switzerland

Division of Ser. No. 798,090, May 18, 1977, abandoned. This application Aug. 19, 1977, Ser. No. 825,901
Claims priority, application Luxembourg, May 18, 1976, 74973
Int. Cl.² A61K *31/09*
U.S. Cl. 424—341 **5 Claims**

1. A method of treating muscle spasm in a mammal, which comprises; administering to the mammal a unit dose form of a therapeutic composition, which comprises; a compound of the formula:



wherein R is selected from the group consisting of alkyl of from 1 to 20 carbon atoms, inclusive, cycloalkyl of from 3 to 20 carbon atoms, inclusive, polycycloalkyl having up to 20 carbon atoms, aralkyl having 7 to 20 carbon atoms, inclusive, and aryl having 6 to 20 carbon atoms, inclusive; and a pharmaceutically acceptable carrier.

4,119,731
PREPARING YEAST RAISED BAKERY PRODUCTS

Kurzius A. Karl, 9615 Cochiti, SE., Albuquerque, N. Mex. 87123

Filed Dec. 10, 1976, Ser. No. 749,308
Int. Cl.² A21D *2/36*
U.S. Cl. 426—20 **13 Claims**

1. A process for making yeast raised bakery product containing glandless cotton seeds consisting essentially of the steps of soaking said glandless cotton seed and sour culture together in water for about 15 minutes to open the seed hull,
adding together wheat flour, water, said soaked glandless cotton seed and sour culture, rye flour, whole wheat, coarse wheat, yeast, salt and malt to form a dough,
mixing said dough,
forming a portion of said dough into a desired shape,
proofing said dough,
and baking the formed dough for about 34 minutes at about 400° F.

4,119,732
METHOD FOR RAPIDLY PRODUCING CHEESE

John F. Kratochvil, Oak Brook, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Jun. 21, 1976, Ser. No. 697,712
Int. Cl.² A23C *19/00*
U.S. Cl. 426—36 **7 Claims**

1. In a process for producing American type cheese of fully developed flavor wherein milk containing between 0-3 million naturally occurring bacteria per milliliter is treated with an acid forming regular cheese starter bacteria culture, coagulated by the subsequent addition of an enzyme, whey is expelled and the resultant curd is cured, the improvement comprising: adding to the milk or curd at a point prior to the curing of the curd an extra pair of bacteria in addition to said regular cheese starter bacteria culture, and adding one or more pregastric lipases prior to or concurrent with the introduction of the milk coagulating enzyme; said extra pair of bacteria comprising at least one strain of *Streptococcus durans,* present at from 2% to 8% of the cell concentration of the starter bacteria and capable of coagulating reconstituted skim milk at 100° F. within 20 hours when added at 1% of this milk, and at least one strain of *Lactobacillus plantarum,* present at from 5% to 15% of the cell concentration of the starter bacteria and in an amount of 2–5 times as great as the *Streptococcus durans,* and capable of coagulating reconstituted skim milk at 100° F. within 24 hours when added at 1% of this milk as well as showing stimulated growth from APT broth by coagulating reconstituted skim milk containing 1% of this substance within 16 hours at 100° F. with a 1% inoculum; and curing the cheese for a period of 4 to 10 weeks at a temperature within the range of 60°–68° F. sufficient to develop a fully aged cheese flavor.

4,119,733
METHOD OF MAKING SOYBEAN BEVERAGES

Dean Shui-Tien Hsieh, Brookline; Roselie Ann Bright, Cambridge, and ChouKyun Rha, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 13, 1977, Ser. No. 796,589
Int. Cl.² A23L *2/02*
U.S. Cl. 426—46 **7 Claims**

1. A method for preparing a soybean beverage which comprises:
a. grinding whole dry soybeans to a powder of a particle size less than about 420 microns, while avoiding excessive heat generation
b. mixing said powder with water at a temperature between about 50° C. and 100° C. to form a slurry to soften the particles and to inactivate lipoxygenase,
c. homogenizing the slurry and
d. adding enzymes to the homogenized slurry to break down the cellulose, pectin and flatulent components of the homogenized slurry

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4,119,734
HIGH PROTEIN RICE MIXTURE

Albert Spell, Yonkers, N.Y., assignor to Nabisco, Inc., East Hanover, New Jersey, Tokyo, Japan

Filed Feb. 24, 1976, Ser. No. 660,869
Int. Cl.² A23L *1/20*
U.S. Cl. 426—72 **19 Claims**

1. A method of preparing a protein-enriched grain food product of substantially uniform density and hydration properties in the dry state composed of particulate soy protein and grain wherein the particulate soy protein particles have a density substantially equivalent to that of the grain whereby the protein-grain product can be packaged and transported without segregation of the product mix and hydration properties whereby preparation of the product for consumption is uniform and resembles that of said grain, said method comprising the steps of:
(a) subjecting a soybean feed material selected from the class

consisting of solvent-extracted meal, grits and flakes of soybean material having an NSI of about 30 to about 70 and containing moisture, to a mechanical pressure of at least 1800 pounds per square inch for a time and at a temperature sufficient to convert said moisture into steam whereby said soybean feed is partially disembittered, toasted without scorching and is compacted at a degree of compactness sufficient to compact said feed into a hard and substantially fused mass having a density and hydration properties substantially equivalent to that of the grain;

(b) fragmenting said mass into chunks and

(c) mixing said chunks with the grain whereby there is obtained a soy protein enriched-grain food product of substantially uniform density and hydration properties.

4,119,735

CURED MEAT SPREAD AND ITS PREPARATION

Robert H. Maher, and Lee E. Kraley, both of Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.

Filed Aug. 11, 1977, Ser. No. 823,771

Int. Cl.[2] A23B *4/02*

U.S. Cl. 426—264 **8 Claims**

1. A process for forming a cured meat spread, consisting essentially of the steps of:

dividing a predetermined weight of uncooked meat into chunks;

subjecting said chunks to initial heating in water heated to greater than 150° F. for a time sufficient to cause the chunks to attain an internal temperature in the range of 120°–150° F. so as to coagulate substantially all of the protein therein;

draining said chunks to provide a separated broth;

grinding said drained chunks;

adding sufficient of said previously separated broth to re-establish said predetermined weight;

adding to said ground chunks various seasonings including sufficient sodium nitrite to cure said meat;

heating said ground chunks to at least about 180° F. for a time sufficient to cause a color change indicative of protein denaturization of said meat; and

packaging said ground meat at an elevated temperature sufficient to provide commercial sterility.

4,119,736

METHOD FOR FIXING CRYOGENICALLY CONDENSED COFFEE AROMATICS IN A GLYCERIDE CARRIER

Robert Franklin Howland, New City, N.Y.; George Anthony Jasovsky, Bayonne, N.J., and Joseph Anthony Galanti, New Fairfield, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Dec. 22, 1975, Ser. No. 643,432

Int. Cl.[2] A23F *1/12*

U.S. Cl. 426—386 **6 Claims**

1. A method for fixing cryogenically condensed coffee aromatics in a liquid glyceride comprising the steps of:

(a) condensing as a frost a coffee aroma-containing gas which has a high carbon dioxide content,

(b) placing the aroma-containing frost in a pressure vessel,

(c) supplying heat to the contents of the vessel to produce an internal temperature in excess of 32° F. and a pressure above 506 p.s.i.a., allowing a liquid water phase to be formed and after this liquid water phase has settled to the bottom of the pressurized vessel,

(d) removing essentially all water from said pressurized vessel, therafter

(e) pumping into said pressurized vessel an amount of a liquid glyceride, said amount being about 1 gram per 0.5 to 6 grams of the aroma frost of step (a), and the internal temperature within the pressure vessel being above the congeal point of the glyceride,

(f) thereafter, slowly releasing the pressure within the vessel so that the glyceride carrier is maintained in a liquid state, and then

(g) removing the aromatized glyceride from the pressure vessel.

4,119,737

SULFUR-CONTAINING FLAVORING AGENTS

Steven van den Bosch, Woudenberg; Dirk Karel Kettenes, Putten (Gld); Kris Bart de Roos, Hoevelaken; Gerben Sipma, Hoevelaken, and Jan Stoffelsma, Hoevelaken, all of Netherlands, assignors to P.F.W. Beheer B.V., Amersfoort, Netherlands

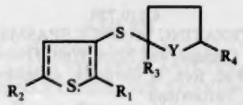
Filed Jan. 26, 1977, Ser. No. 762,534

Claims priority, application United Kingdom, Dec. 13, 1973, 57908/73

Int. Cl.[2] A23L *1/231*; C07D *333/00*

U.S. Cl. 426—535 **17 Claims**

1. A chemical compound having the structural formula



wherein the S-containing ring is selected from the class consisting of

(a) the tetrahydrothiophene ring;

(b) the 4,5-dihydrothiophene ring; and

(c) the thiophene ring;

Y is oxygen or sulfur and R_1, R_2, R_3 and R_4 are hydrogen or 1 to 3 carbon alkyl groups.

4,119,738

SWEET MATERIAL

Hans Wagner, Constance, and Alfred Maierhofer, Allensbach, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed May 17, 1976, Ser. No. 687,321

Claims priority, application Fed. Rep. of Germany, May 16, 1975, 2521816; Apr. 5, 1976, 2614585; Apr. 15, 1976, 2616731

Int. Cl.[2] A23L *1/236*

U.S. Cl. 426—548 **26 Claims**

1. A foodstuff containing a compound selected from the group consisting of the sodium and potassium salts of 2-hydroxy-4-methyl-valeric acid in an amount effective to act as a sweetener therefor, said foodstuff being selected from the group consisting of flavored beverages, baked goods, candy, cake mixes, jelly and jam.

4,119,739

PROCESS OF PREPARING SIMULATED FRUIT

Bryan Edwin Barwick, Rushden, and Michael Edwin Sneath, Wellingborough, both of England, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 690,944, May 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 531,377, Dec. 10, 1974, abandoned. This application Mar. 21, 1977, Ser. No. 779,783

Int. Cl.[2] A23L *1/04*

U.S. Cl. 426—573 **3 Claims**

1. In a process for preparing simulated fruit berries consisting essentially of

(A) co-extruding

(a) an aqueous sol selected from the group consisting of aqueous alginate sol and aqueous low-methoxy pectin sol, and

(b) a fruit-flavored aqueous system selected from the group consisting of fruit-flavored solutions, fruit juice, fruit pulp and fruit puree to form fruit-flavored drops coated with the sol; and

(B) dropping the coated drops from 2 to 30 cms into an aqueous setting bath containing as setting agent an edible, water-soluble calcium salt to set the sol to a gel selected from the group consisting of calcium alginate and low-methoxy pectate gel and thereby form simulated fruit consisting essentially of drops of a fruit-flavored aqueous system coated with said gel;

the improvement, whereby distortion of the drops on entering the setting bath and disruptive splashing of the bath are minimised, consisting essentially in bubbling a gas non-reactive to the setting bath, the sol and the fruit-flavored system through the setting bath to form a foam at the surface of the setting bath, the height of the foam being in the range 2 to 25 millimeters.

4,119,740

COCOA EXTENDER

Silvio Crespo, Lititz, Pa., assignor to Wilbur Chocolate Company, Inc., Lititz, Pa.

Filed Jun. 14, 1977, Ser. No. 806,547
Int. Cl.[2] A23G *1/00*
U.S. Cl. 426—631 30 Claims

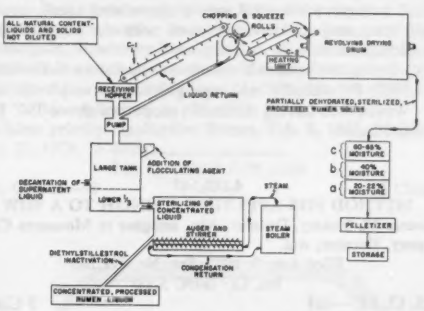
1. An extended cocoa powder comprising cocoa and a cocoa extender selected from the group consisting of peanut grit, almond shells and soybean flakes in a ratio of 1:99 to 99:1, said cocoa extender being prepared by roasting said cocoa extender at a temperature of from about 275° F. to about 475° F. for from about 20 to about 90 minutes to develop a cocoa imparting color and pulverizing said roasted cocoa extender 200 mesh to a cocoa-like consistency, said extended cocoa powder having the color, bulk, mouth feel and flavor of cocoa.

4,119,741

PRODUCTION OF SUBSTANTIALLY FULL-DIET BEEF CATTLE FEED THROUGH PROCESSING OF THE RUMEN CONTENT OF SLAUGHTERED CATTLE

Paul A. Stahler, 200 Maple La., Jordan, Minn. 55352

Division of Ser. No. 370,459, Jun. 15, 1973, Pat. No. 3,928,640, which is a continuation-in-part of Ser. No. 12,080, Feb. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 667,324, Sep. 7, 1967, Pat. No. 3,545,977. This application Jul. 10, 1975, Ser. No. 594,693
Int. Cl.[2] A23K *1/10*
U.S. Cl. 426—641 2 Claims



1. A nutritive beef cattle feed, furnishing at least 75% of full diet requirements for feeding cattle, comprising a high percentage of amino acids, a total protein content by weight within a range of from 10% to 12%, and a fat content by weight within a range of from 3.1% to 3.8%, said feed having been produced by treating only the rumen content of slaughtered cattle, by removing at least 80% of the liquid and flash drying at a temperature from 2000° F. to 3000° F. for from 7 to 10 minutes.

4,119,742

RECONSTITUTED FRIED PUFFED PORK SKINS

Gertraud B. Stupec, Hinsdale, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Oct. 22, 1976, Ser. No. 734,967
Int. Cl.[2] A23L *1/31*
U.S. Cl. 426—641 14 Claims

1. A method for producing a fried and puffed product from animal parts comprising:

(1) providing a starting material which comprises particles of animal parts which are sufficiently high in collagen content to cause gelatinization of the animal parts and at least 50% by weight thereof are rendered parts;

(2) moisturizing the particles to moisture contents between 18% and 35% by weight;

(3) feeding the moisturized particles to the throat to a die-ended screw-type extruder having thermally-controllable barrel sections along the length of screw;

(4) maintaining the barrel section next to the throat at temperatures of less than 85° F., maintaining the extruder barrel between the throat section and a section next to the die at a temperature of at least 215° F. to partially gelatinize but not to substantially denature said animal parts and maintaining the barrel section next to the die and the die at temperatures such that the extrudate exiting the die is at temperatures no greater than 220° F.;

(5) rotating the screw of the extruder and controlling the rate of feed of the moisturized particles to the throat so that a smooth, glossy extruder exits from the die and the extrudate will not revert to an agglomeration of particulate material at room temperature;

(6) cooling the extrudate to temperatures of less than 160° F.;

(7) cutting the extrudate to pellets so that one dimension thereof is no greater than $\frac{1}{8}$th inch;

(8) drying the pellets to moisture contents of less than 15% by weight; and

(9) frying the pellets in fat at temperatures between 350° F. and 420° F. until the moisture content of the pellets is less than 3.5% by weight and the pellets have puffed to at least twice the unpuffed volume.

4,119,743

METHOD FOR MANUFACTURE OF LAMINATES WHICH ARE USEFUL AS PACKAGING MATERIALS

Chen-i Lu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 733,560, Oct. 18, 1976, Pat. No. 4,070,398. This application Aug. 2, 1977, Ser. No. 821,116
Int. Cl.[2] B05D *3/06*
U.S. Cl. 427—44 13 Claims

1. A method of making a laminated sheet material which comprises the steps of:

(1) coating a metal foil with a first radiation-curable composition that is capable of forming a chemically-resistant layer upon radiation curing,

(2) irradiating said coating to cure said first composition,

(3) overcoating the resulting cured layer with a second radiation-curable composition that is capable of forming a heat-sealable layer upon radiation curing,

(4) irradiating said overcoat to cure said second composition, and

(5) heating said overcoat to fuse said second composition.

4,119,744

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES IN WHICH A LAYER OF SEMICONDUCTOR MATERIAL IS PROVIDED ON A SUBSTRATE

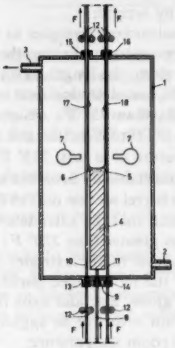
Jean-Jacques Lucien Emile Brissot, Maisons Alfort; Christian Belouet, Sceaux, and René Martres, Argentueil, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 654,940, Feb. 3, 1976, abandoned. This application Jul. 18, 1977, Ser. No. 816,387

Claims priority, application France, Feb. 7, 1975, 75 03926; Sep. 26, 1975, 75 29556

Int. Cl.[2] B05D *5/12*; B01D *9/02*

U.S. Cl. 427—45 **21 Claims**



1. A method of manufacturing semiconductor devices comprising a layer of semiconductor material, comprising the steps of:

(a) providing a strip-shaped solid substrate having a main surface,

(b) providing a solid support having a substantially horizontal surface and comprising a substantially floating liquid mass of said semiconductor material on said substantially horizontal surface, said main surface being wettable by said liquid semiconductor material,

(c) contacting said liquid mass with said main surface of said substrate, onto which substrate the layer of semiconductor material is to be provided,

(d) moving said substrate in its longitudinal direction along and in contact with said liquid mass so that a liquid layer of said semiconductor material is formed on said substrate and taken along with it, and

(e) substantially progressively solidifying said liquid layer.

4,119,745

DEPOSITION OF ELECTROLUMINESCENT MATERIAL THROUGH SUPERIMPOSED DUAL MASKS

Peter John Fennemore Smith, Wimborne, England, assignor to Smiths Industries Limited, London and Phosphor Products Company Limited, Poole, both of, England

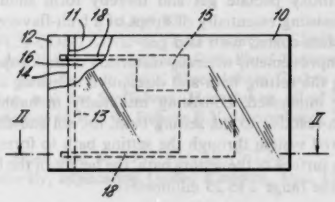
Filed Dec. 22, 1976, Ser. No. 752,941

Claims priority, application United Kingdom, Dec. 23, 1975, 52585/75

Int. Cl.[2] B05D *5/06*

U.S. Cl. 427—66 **8 Claims**

1. A method of manufacturing a display device having a layer of electroluminescent material which is disposed between a pair of electrodes to which a voltage is to be applied to excite the electroluminescent material to luminescence, comprising the steps of disposing on an assembly having a substrate with one of the said electrodes thereon, first and second masks with the masks overlying one another, the first mask being disposed nearest to the said assembly and having formed therein an aperture defining a region in which the said electroluminescent material is to be disposed and a slot extending from that aperture, and the second mask having an aperture therein aligned with the said aperture in the first mask, disposing the said electroluminescent material in the said aligned apertures, removing the said second mask when the electroluminescent



material in the said apertures has solidified, forming the said other electrode on the exposed surface of the said electroluminescent material and within the slot, and removing the first mask.

4,119,746

CROSS-LINKING RESIN SATURANT AND METHOD

Merrill Bleyle, Waltham, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Jun. 14, 1977, Ser. No. 806,447

Int. Cl.[2] B32B *27/00*

U.S. Cl. 427—381 **10 Claims**

1. The method of preparing a resin impregnated non-woven web having thermoplastic characteristics at temperatures below 190° F. and thermoset characteristics at temperatures above 190° F. comprising:

(a) preparing a cross-linking latex composition by

(1) charging a reaction vessel with a small amount of a seed latex polymer along with an initiator in an aqueous phase to provide nucleating sites for polymerization,

(2) adding, substantially continuously, monomers and emulsifiers at a controlled rate, said monomer consisting essentially of about 59 parts by weight styrene, about 41 parts by weight ethylacrylate, and 2 parts by weight N-methylolacrylamide, the addition taking place at about 150° F. over a 4½ hour period,

(3) post cooking the latex composition up to about three additional hours to reduce the free monomers content of the latex composition,

(4) adjusting the latex composition after polymerization is completed from as manufactured state to a pH value between 6.0 and 8.0 with a neutralizing agent;

(b) saturating a non-woven web with the adjusted latex composition;

(c) drying the saturated web at a temperature below about 190° F. whereby an impregnated thermoplastic non-woven web having thermoset properties above 190° F. is produced.

4,119,747

METHOD FOR APPLYING A FINISH TO A TOW

Thomas M. Veazey, Decatur, Ala., assignor to Monsanto Company, Decatur, Ala.

Filed Aug. 3, 1977, Ser. No. 821,263

Int. Cl.[2] B05C *5/00*

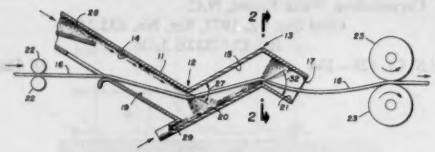
U.S. Cl. 427—424 **3 Claims**

1. The method of applying a fiber finish to a tow of filaments, comprising:

a. advancing the tow along a path through a housing, said path having at least two bends each having an inside and an outside corner, said bends being in opposite directions to each other in such a manner that said path has a sawtooth configuration; and

b. passing a liquid containing a fiber finish along the walls of the housing leading to the inside corners of the bends, the liquid having a velocity such that said liquid clings in

layers to the walls of the housing to said inside corners, the bends of said inside corners being sufficiently great



that said liquid separates from said walls and passes through the tow at said inside corners.

4,119,748

STEEL CORD REINFORCED PLASTIC MATERIALS

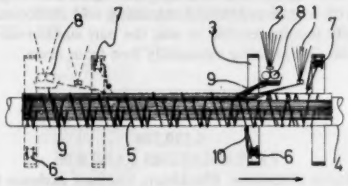
Germain Verbauwhede, Zwevegem, and Frans Coopman, Harelbeke, both of Belgium, assignors to N. V. Bekaert S.A., Zwevegem, Belgium

Filed May 26, 1976, Ser. No. 689,974

Claims priority, application United Kingdom, Jun. 5, 1975, 24300/75

Int. Cl.² B32B *15/18, 17/02*

U.S. Cl. 428—36 **37 Claims**



1. A reinforced shaped synthetic composite comprising a reinforcing material consisting essentially of at least one layer of a combination of glass fibers and steel cord, said combination comprising steel cord at least partially embedded in glass fiber rovings having substantially the same orientation as the steel cord, a synthetic resin matrix material, said glass fiber rovings being impregnated by said matrix material.

4,119,749

MOULDED LIGHT-WEIGHT FRAMED PANEL

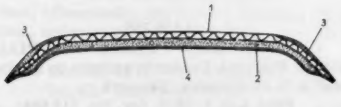
Jacques Roth, Strasbourg; Michel Roth, Ostwald; Paul Seiler, Illkirch-Graffenstaden; Roger Lavenir, Strasbourg, and Alain Manigold, Strasbourg-Koenigshoffen, all of France, assignors to Roth Freres, S.A., Strasbourg-Meinau, France

Division of Ser. No. 650,983, Jan. 21, 1976, Pat. No. 4,059,660. This application Jul. 21, 1977, Ser. No. 817,921

Claims priority, application France, Feb. 5, 1975, 75 05064; Dec. 22, 1975, 75 40180

Int. Cl.² B32B *3/06, 3/26*

U.S. Cl. 428—99 **3 Claims**



1. A molded panel comprising in combination a sheet of corrugated cardboard, a sheet of polyurethane foam disposed on one side of said sheet of cardboard, a finishing cover sheet disposed on the side of said foam sheet which is opposite said cardboard, further polyurethane foam disposed on at least the marginal portions of said cardboard sheet on the side of said cardboard sheet opposite said foam sheet, and in-situ polymerized polyol and isocyanate securing said cover sheet and said foam sheet together and securing said foam sheet and said corrugated cardboard sheet together and securing said further foam and said corrugated cardboard sheet together, said panel being curved in the vicinity of said further foam.

3. A panel as claimed in claim 1, and fastening elements held between the cardboard and the foam and projecting from the margins of the panel to serve for fixing the panel.

4,119,750

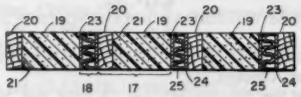
SANDWICH PANEL STRUCTURE

William Hunt Porter, West Olive, Mich., assignor to W. H. Porter, Inc., Holland, Mich.

Filed May 2, 1977, Ser. No. 792,808

Int. Cl.² B32B *5/12, 3/28*

U.S. Cl. 428—105 **19 Claims**



1. In a structural panel material of a sandwich-type construction comprising inner and outer rigid facings and a core between said facings and bonded thereto, the improvement wherein said core comprises a plurality of strips of lightweight core material arranged in parallel relation with opposing lateral surfaces; and double-faced corrugated paperboard sheet material between adjacent ones of said strips and including a center fluted portion having a plurality of undulations connected by means of the facing sheets of said paperboard material alternately to said surfaces, said core being characterized in being flexible enough to conform to a mold shape under gravity and with little or no external pressure.

4,119,751

COVER MEANS FOR PROTECTING TUBES CONVEYING HOT MEDIUMS

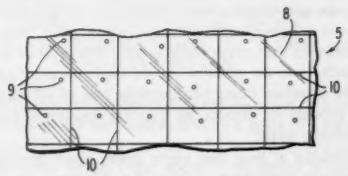
Erland Nilsson, Torshalla, and Lennart Lundbohm, Nacka, both of Sweden, assignors to Nyby Bruk AB, Sweden

Division of Ser. No. 352,420, Apr. 19, 1973, Pat. No. 3,933,181. This application Dec. 20, 1974, Ser. No. 535,086

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1972, 2219228

Int. Cl.² B32B *3/10;* F16L *58/00*

U.S. Cl. 428—131 **19 Claims**



1. A covering arrangement for tubes conveying hot mediums comprising at least one cover means for protecting surfaces of tubes against moisture, said cover means having holes extending therethrough with the holes in at least a first portion of the cover means being permeable to water vapor, but substantially impermeable to water, said cover means including a channel-like cross-section having a top wall and side walls with said first portion being arranged at an upper portion of said channel-like cross-section in said top wall and side walls, and said cover means further including a second portion having means for draining water from the interior of said cover

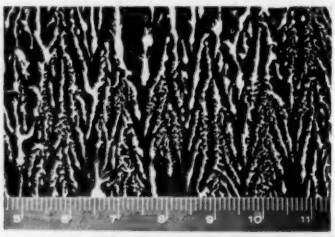
means, said first and second portions forming two parts of said cover means for enclosing a space having self-drying properties about said tubes, said means for draining being at least one second hole through said cover means at said second portion, said at least one second hole having a second size larger than said holes through said first portion, said second size permitting water to pass from the interior space of said cover means to the exterior.

4,119,752

GYPSUM WALLBOARD-MAKING PROCESS AND PRODUCT

William J. Long, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 491,097, Jul. 23, 1974, Pat. No. 4,051,291, which is a continuation of Ser. No. 221,324, Jan. 27, 1972, abandoned. This application May 23, 1977, Ser. No. 799,412
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.[2] B32B *7/14, 31/12*
U.S. Cl. 428—198 **6 Claims**



1. In a panel comprising a rehydrated gypsum core securely bonded to a paper cover sheet by an adhesive disposed at the interface of said core and said cover sheet, the improvement wherein said adhesive is polyvinyl alcohol and is disposed at limited areas of said interface, the amount of adhesive present at said limited areas being sufficient to provide secure bonding of said paper cover sheet to said gypsum core when said adhesive has set, and wherein substantial areas of said interface are free of said adhesive, said free areas being sufficient to provide wet bonding of said cover sheet to said core prior to the setting of said adhesive, the portion of said paper cover sheet spaced from said interface being substantially free of adhesive.

3. A process for producing gypsum wallboard comprising the following steps:

a. providing at least one paper cover sheet having a bond liner and applying a coating of a polyvinyl alcohol adhesive by calendering to provide a pattern having said adhesive at limited areas of said bond liner while leaving substantial areas free of said adhesive,

b. casting an aqueous slurry of calcium sulfate hemi-hydrate on said paper cover sheet over said bond liner with the water from said aqueous slurry establishing wet bonding between said slurry and the uncoated portions of said bond liner, and

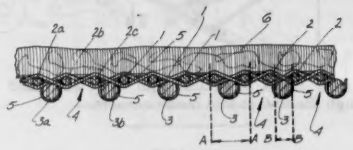
c. setting said slurry to form a core and setting said adhesive to establish an adhesive bond between said core and said paper cover sheet at the limited areas containing said adhesive.

4,119,753

PAPERMAKER'S FELT WITH GROOVED SURFACE

Frederick R. Smart, Averill Park, N.Y., assignor to Hyyck Corporation, Wake Forest, N.C.

Filed Sep. 12, 1977, Ser. No. 832,214
Int. Cl.[2] B32B *5/06*
U.S. Cl. 428—234 **10 Claims**



1. A papermaking fabric having a face side and a machine side, said fabric comprising interwoven warp and filling yarns on the face side of the fabric, bulky rib forming yarns on the machine side of the fabric, said rib forming yarns comprising staple or multifilament yarns extending in parallel relation and lying in spaced apart relation relative to each other to define channels therebetween, a batt surface on the face side of said fabric needled through said warp and filling yarns and into said rib forming yarns, with the channels therebetween being essentially free of batt fibers, said rib forming yarns being impregnated with a resin capable of rendering said rib forming yarns essentially incompressible in use, the batt surface on the face side of the fabric being essentially free from resin.

4,119,754

PAPERMAKERS FABRICS

Bryan James Gisbourne, Blackburn, England, assignor to Scapa-Porritt Limited, Blackburn, England

Filed Oct. 27, 1976, Ser. No. 736,161
Claims priority, application United Kingdom, Oct. 30, 1975, 44799/75
Int. Cl.[2] B05D *3/02*; B32B *27/38*
U.S. Cl. 428—255 **20 Claims**

1. An open mesh band for use as a papermakers fabric comprising:

monofilament yarns, each yarn having an outer surface and being comprised of a synthetic polymeric material;

sheaths for each of said yarns, each sheath including a second synthetic polymeric material having abrasion resistance which is greater than said first synthetic material and being in the form of a coherent continuous thin film, said second synthetic polymeric material comprising less than ten percent of the weight of the papermakers fabric; and

said films being bonded directly to each of said yarns only at said outer surfaces of said yarns so that openings in said monofilament yarns are not covered.

4,119,755

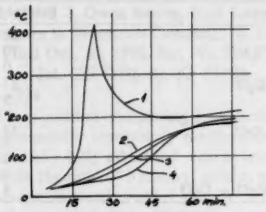
FIRE RETARDANT PLATE MATERIAL

Helge Höyer, Birkeröd, Denmark, assignor to Rockwool International A/S, Hedehusene, Denmark

Filed Aug. 9, 1976, Ser. No. 712,611
Claims priority, application Denmark, Dec. 8, 1975, 3643/75
Int. Cl.[2] B32B *19/00*
U.S. Cl. 428—284 **1 Claim**

1. Fire retardant plate material to incorporate in walling, doors and partition means in housing, ships and the like, comprising a mineral wool, having the fibres thereof bonded together at intersections by a binding agent, said fibres being transformable from a glasslike amorphous state into crystalline

state prior to softening visibly when exposed to increasing temperature characterized in comprising at least two layers of



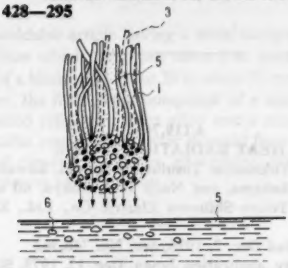
mineral wool being separated by thin layers of a substantially inorganic cement between the layers of mineral wool.

4,119,756

METHOD OF MANUFACTURING A MARKING PEN HAVING A NIB AND AN INK RESERVOIR INTEGRAL THEREWITH

Yoshio Midorikawa, Tokyo, assignor to Glasrock Products, Inc., Fairburn, Ga.

Filed Jun. 10, 1976, Ser. No. 694,525
Int. Cl.[2] B43K *1/12;* D04H *3/14*
U.S. Cl. 428—295 **9 Claims**



1. A method for producing a writing nib material having an integral ink reservoir comprising:
(a) forming a plurality of fibers into a fiber bundle;
(b) cutting said fiber bundle to a predetermined length; then
(c) impregnating a first portion of said predetermined length of said fiber bundle with a solution of polymerizable synthetic resin in solvent, leaving a second portion of said predetermined length of said fiber bundle untreated; and
(d) allowing said resin in said first portion of said fiber bundle to set whereby the gases generated by volatization of the solvent form capillary passages substantially longitudinally of said bundle.

8. The product formed by the process of claim 1.

4,119,757

FLORAL DISPLAY BLOCKS OF UREA-FORMALDEHYDE FOAM

John A. Hobson, Minneapolis, and Paul K. Schilling, St. Paul, both of Minn., assignors to H & S Industries, Inc., St. Paul, Minn.

Filed Dec. 23, 1977, Ser. No. 863,602
Int. Cl.[2] B32B *3/26, 5/18*
U.S. Cl. 428—311 **9 Claims**

9. Hydrophilic floral display foam blocks of frothed urea-formaldehyde resin, wherein said urea-formaldehyde resin block comprises:
(a) a frothed urea-formaldehyde resin block of substantially open cell configuration, said urea-formaldehyde resin block including:
(1) an alkyl-aryl sulfonate selected from the group consisting of sodium tertiary-butyl-benzene sulfonate, sodium hexylbenzene sulfonate, and sodium toluene sulfonate in an amount ranging from between about 3.5% and 7% of the resin solids;
(2) a water soluble acid selected from the group consisting of hydrochloric, benzene sulfonic and sulfuric acids;
(3) a quaternary ammonium salt selected from the group consisting of alkyltrimethylammonium chloride and dialkyldimethylammonium chloride wherein the alkyl portion of the compound has from between 8 and 18 carbon atoms, and wherein said ammonium salt is present in substantially equal molar relationship to said alkyl-aryl sulfonate.

4,119,758

ELECTRICAL CONDUCTORS HAVING INSULATING COATINGS FROM SOLUTIONS OF POLYESTER-IMIDES

John T. Keating, Clifton Park, N.Y., assignor to Schenectady Chemicals, Inc., Schenectady, N.Y.

Division of Ser. No. 770,310, Feb. 22, 1977. This application Oct. 28, 1977, Ser. No. 846,393
Int. Cl.[2] B32B *15/08;* C08G *73/16*
U.S. Cl. 428—379 **19 Claims**

1. An electrical conductor having an insulating coating of polyester-polyimide prepared by curing on the conductor a polyester-polyimide having a hydroxy to carboxyl ratio of 1.25:1 to 2:1, 95 to 50% ester groups, 5 to 50% imide groups, the polyimide being an imide of reactants comprising a diamine and trimellitic anhydride, the polyester being an ester of isophthalic acid or terephthalic acid or benzophenone dicarboxylic acid with up to 10% of an alkane dicarboxylic acid having 6 to 10 carbon atoms with alcohols wherein 5 to 45% of the hydroxyl groups are contributed by (I) an ether-alcohol which either (a) has the formula

$$RO(C_nH_{2n}O)_xH$$

where R is an alkyl group of 1 to 6 carbon atoms or phenyl, n is 2 or 3 and x is 2 or 3 or (b) is the monophenyl ether of ethylene glycol, (II) at least 20% of the hydroxyl group are contributed by a trihydric alcohol and (III) any balance of hydroxyl groups are contributed by a dihydric alcohol, said polyester-polyimide having a sufficiently low molecular weight that it is soluble in a mono lower alkyl ether of diethylene glycol or in the monophenyl ether of diethylene glycol or phenoxyethanol or a mixture of said phenyl ethers.

4,119,759

POWDERED RUBBER

Erhardt Fischer, and Michael Hugh Richmond, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Sep. 12, 1977, Ser. No. 832,474
Claims priority, application Canada, Oct. 7, 1976, 262927
Int. Cl.[2] B05D *7/00*
U.S. Cl. 428—407 **12 Claims**

1. A process for the production of free flowing rubber particles which comprises the coagulation of a latex of a rubber in the presence of a minor proportion of a terpolymer latex, said minor proportion being from about 1 to about 5 parts by weight of dry terpolymer per 100 parts by weight of dry rubber, heating the coagulated mixture so produced to about 190° to about 210° F. while being maintained under mild agitation, and adding to said heated coagulated mixture to encapsulate the rubber particles therein, a latex of said terpolymer in an amount of from about 5 to about 15 parts by weight of dry terpolymer per 100 parts by weight of dry rubber, separating the encapsulated rubber particles from the aqueous phase and drying the separated encapsulated rubber particles to yield free flowing rubber particles, said rubber being a copolymer of about 50 to about 80 weight percent of a C_4-C_6 conjugated diolefin and about 20 to about 50 weight percent of a C_3-C_5 vinyl compound containing a nitrile group, said coagulation being in the presence of from 0.1 to 1.0 weight percent of an

inorganic salt in water at a temperature of from about 140° to about 180° F. while being subjected to high speed, high shear agitation, characterized in that said terpolymer contains from about 40 to about 60 weight percent of a C_4-C_6 conjugated diolefin, from about 10 to about 20 weight percent of a C_3-C_5 vinyl compound containing a nitrile group and from about 30 to about 40 weight percent of a C_8-C_{10} vinyl-or vinylidene-substituted aromatic hydrocarbon and that said terpolymer has rubbery and resinous phases.

4,119,760
CHEMICAL STRENGTHENING OF GLASS

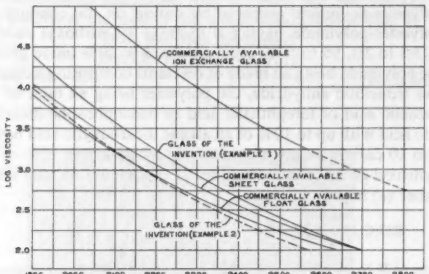
Dale W. Rinehart, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 605,108, Aug. 15, 1975, Pat. No. 4,015,045, which is a continuation-in-part of Ser. No. 432,006, Jan. 9, 1974, abandoned. This application Dec. 17, 1976, Ser. No. 751,922

The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.

Int. Cl.[2] **B32B** *17/00;* **C03C** *15/00, 3/04*

U.S. Cl. 428—410 **2 Claims**



1. In a method for strengthening an alkali metal silicate glass article in which sodium ions in the surface of the glass article are replaced by larger monovalent alkali metal ions by bringing the surface of the glass article into contact with the source of said larger monovalent alkali metal ions so as to place a compression layer in the surface of the glass article, the improvement which comprises forming the article to be strengthened from an alkali metal oxide-zirconiaaluminosilicate glass substantially free from devitrification consisting essentially by weight on the oxide basis of about:

Component	Percent by Weight
SiO_2	52 - 58
Na_2O	10 - 19
K_2O	0 - 10
$Na_2O + K_2O$	17 - 23
Al_2O_3	9 - 13
ZrO_2	2 - 4.5
$Al_2O_3 + ZrO_2$	12 - 17
CaO	0 - 5
MgO	4 - 6
TiO_2	0 - 7
$TiO_2 + MgO + CaO$	4 - 14

wherein the glass includes less than 0.1 percent by weight Li_2O and the above components constitute at least 95 percent by weight of the glass composition and are proportioned relative to one another so as to provide glass having a viscosity of 100 poises at a temperature less than 2800° F. and a viscosity of 10,000 poises at a temperature less than 2050° F. and having a working range of at least 125° F.

2. A chemically strengthened glass article exhibiting a surface compressive stress after being subjected to surface abrasion composed of an interior portion which is in tension and a surface compressive layer, said interior portion comprising a base glass consisting essentially by weight on the oxide basis of about:

Component	Percent by Weight
SiO_2	52 - 58
Na_2O	10 - 19
K_2O	0 - 10
$Na_2O + K_2O$	17 - 23
Al_2O_3	9 - 13
ZrO_2	2 - 4.5
$Al_2O_3 + ZrO_2$	12 - 17
CaO	0 - 5
MgO	4 - 6
TiO_2	0 - 7
$TiO_2 + MgO + CaO$	4 - 14

wherein the glass includes less than 0.1 percent by weight Li_2O and the above components constitute at least 95 percent by weight of the base glass composition and are proportioned relative to one another so as to provide a base glass having a viscosity of 100 poises at a temperature less than 2800° F. and a viscosity of 10,000 poises at a temperature less than 2050° F., and having a working range of at least 125° F.; said surface layer having a composition chemically altered from that of the base glass to the extent that the surface layer has a lesser content of sodium with a correspondingly greater content on an ionic basis of a monovalent alkali metal ion having a larger ionic diameter than sodium.

4,119,761
HEAT RADIATION ANODE

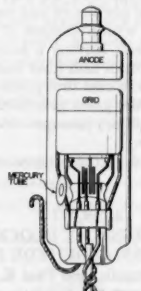
Takashi Kuze, Yokohama; Toshiharu Matsuki, Kawasaki; Koji Nagaoka, Yokohama, and Naoji Iwai, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 7, 1976, Ser. No. 748,362

Claims priority, application Japan, Dec. 12, 1975, 50-148912; Dec. 24, 1975, 50-155379

Int. Cl.[2] **H01J** *1/38*

U.S. Cl. 428—472 **22 Claims**



1. A heat radiation anode element comprising a substrate and a heat radiation layer formed on the substrate and comprising oxides of a chromium-containing alloy, the heat radiation layer containing at least 35% by weight of chromium based on the total weight of the metal components of the oxides, and an emissivity-improving agent selected from the group consisting of vanadium, titanium, zirconium, niobium and mixtures thereof, in an amount sufficient to improve the total emissivity of said heat radiation element.

4,119,762

COATING COMPOSITIONS COMPRISING ALKOXYMETHYLAMINOTRIAZINES AND POLYOLS

George J. Anderson, East Longmeadow; Timothy F. Desmond, Longmeadow, and J. Owen Santer, East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 20, 1976, Ser. No. 734,079
Int. Cl.[2] C08L *61/32, 61/28*
U.S. Cl. 428—524 19 Claims

1. A liquid composition comprising 1,4-dimethylolcyclohexane and a substantially completely methylolated polyaminotriazine substantially fully etherified with at least one C_1 to C_4 alcohol, wherein the ratio of hydroxyl groups of the 1,4-dimethylolcyclohexane to alkoxymethyl groups of the polyaminotriazine is in the range of about 1:1 to about 1:2.

4,119,763

ANTI-CORROSION WELDABLE COATINGS

Noel D. Blair, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 510,086, Sep. 27, 1974, abandoned, which is a division of Ser. No. 245,384, Apr. 19, 1972, Pat. No. 3,884,705. This application Mar. 29, 1976, Ser. No. 671,190
Int. Cl.[2] B32B *15/18, 15/02, 15/16*
U.S. Cl. 428—563 23 Claims

1. A weldable article having a metal surface, coated with a composition which comprises about 3 to about 80 percent by weight of a binder and about 20 to about 97 percent by weight of a filler, the filler being comprised of a major amount of a comminuted refractory ferro alloy and a minor amount of a non-metallic corrosion inhibitor selected from the group consisting of chromates, nitrites, phosphates, molybdates, tungstates, silicates and benzoates.

4,119,764

HELICAL REINFORCING BAR FOR STEEL CAGE IN CONCRETE STRUCTURE

Katsuhisa Mizuma, Fujisawa, and Tetsuro Awazu, Chigasaki, both of Japan, assignors to Neturen Company Ltd., Tokyo, Japan

Filed Nov. 23, 1976, Ser. No. 744,447
Int. Cl.[2] E04C *5/06*
U.S. Cl. 428—592 4 Claims

1. A helical reinforcing bar for use as a stirrup or hoop for a steel reinforcing cage for a concrete structure, said bar being a high-strength steel bar having a yield strength of over 55kg/mm^2 and being in the form of a helix and having no plastic deformation when the helix is collapsed to a fully-compressed state and which expands to the desired length with the coils at the desired pitch by its own elasticity, whereby the helical reinforcing bar can be compressed to a fully collapsed state and carried in this state to the site where it is to be used, and after being positioned around a group of longitudinal bars which have already been positioned in the desired positions in a reinforced structure, said spiral reinforcing bar is released, and thereupon said spiral reinforcing bar extends itself to a specified length with the same pitch being maintained between coils over the entire length of said extended helical reinforcing bar.

4,119,765

WELDED FERRITIC STAINLESS STEEL ARTICLES

Kenneth E. Pinnow, and Jerome P. Bressanelli, both of Pittsburgh, Pa., assignors to Crucible Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 680,547, Apr. 27, 1976, abandoned. This application Aug. 4, 1977, Ser. No. 821,896
The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.
Int. Cl.[2] B32B *15/18*
U.S. Cl. 428—683 33 Claims

29. A substantially fully ferritic stainless steel welded article with high corrosion resistance, said welded article consisting essentially of, in weight percent, up to 0.04 carbon, up to 0.04 nitrogen, with the carbon plus nitrogen content being above 0.02 but below 0.07, up to 1.0 manganese, up to 1.0 silicon, 23.0 to less than 28.0 chromium, 1.00 to 4.75 nickel, 2.50 to 3.50 molybdenum, up to 0.30 titanium, up to 0.30 columbium, with the columbium and titanium contents being at least equal to the amounts given by the following equation:

$$\% Ti/6 + \% Cb/8 = (\%C + \%N)$$

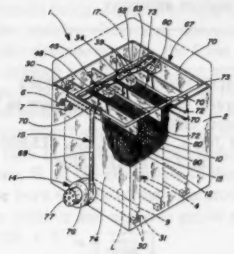
and the balance iron and incidental impurities.

4,119,766

ENERGY CELL DEVICE

Gerard A. Doering, 1403 Caves Rd., Novelty, Ohio 44072

Continuation of Ser. No. 640,956, Dec. 15, 1975, abandoned. This application Apr. 13, 1977, Ser. No. 786,996
Int. Cl.[2] H01M *2/40*
U.S. Cl. 429—70 9 Claims



1. An energy system which has very high power and current output for a given volume of core material with a relatively long operating life comprising,

a support receptacle adapted for receiving a liquid electrolyte therein,

at least one galvanic cell supported within said receptacle for fluid contact with said electrolyte,

said galvanic cell including,

a cathode,

an anode made from a generally flat plate made from a non-ferrous material, selected from the group consisting of magnesium and magnesium alloy,

a separator embodying an electrically nonconductive material physically separating said anode and cathode,

said separator being porous to permit flow of electrolyte between said anode and cathode,

said cathode comprising a porous, metallic multi-layer construction disposed about said separator,

each layer of said cathode material made from a copper woven sheet material having an open-mesh construction having a percentage void area greater than 50%,

said separator being of a multi-layer construction wrapped around said plate, and

said cathode being wrapped around said separator.

4,119,767
SECONDARY BATTERY

Fritz Beck, Ludwigshafen; Rolf Wurmb, Heidelberg, and Klaus Boehlke, Hessheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

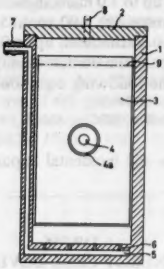
Filed Apr. 1, 1977, Ser. No. 783,700

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619147

The portion of the term of this patent subsequent to May 30, 1995, has been disclaimed.

Int. Cl.[2] H01M *10/00*

U.S. Cl. 429—105 **3 Claims**



1. A secondary battery with aqueous solutions of lead salts as electrolytes and inert electrode base plates for the active materials, wherein the electrolyte additionally contains from 0.1 to 100 mmoles/l of salts of manganese, cobalt, nickel, copper, thallium, bismuth and/or antimony.

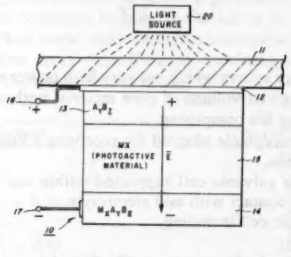
4,119,768
PHOTOVOLTAIC BATTERY

Michel Lucien Bayard, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 8, 1977, Ser. No. 813,920

Int. Cl.[2] H01L *31/04*

U.S. Cl. 429—111 **13 Claims**



1. A photovoltaic battery capable of generating and storing its own energy when exposed to a light source, comprising in combination:

a body of a photoactive material having a general chemical composition represented by the formula MX, where M is a positive ion and X is a negative ion, and which releases a positive ion M+ in response to its exposure to a light source,

a first layer of material which is ionically conductive with respect to the positive ion releasable by said photoactive body, said first layer being disposed against one surface of said photoactive body and having a general chemical composition represented by the formula A_yB_z, where the subscript *y* represents the number of atoms of element A and the subscript *z* represents the number of atoms of element B,

a second layer of electrically conductive material which is ionically conductive with respect to the positive ion releasable by said photoactive body and of relatively higher ionic concentration as compared to said first layer, said second layer being disposed against a surface of said photoactive body opposite from said one surface thereof and having a general chemical composition represented by the formula $M_xA_yB_z$, where M is the same ion found in the photoactive material of said photoactive body, A and B are the same elements comprising the ionically conductive material of said first layer, and the *x*, *y* and *z* subscripts respectively represent the number of atoms of M, A and B where $0 < x < 1$, and

a body of electronically conductive material disposed against said first layer.

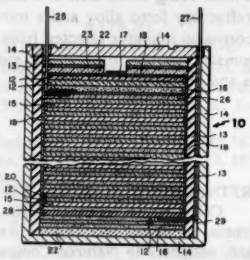
4,119,769
THERMAL BATTERY HAVING IRON PYRITE DEPOLARIZER

Alan Arthur Schneider, Baltimore, and George C. Bowser, Towson, both of Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Continuation of Ser. No. 675,501, Apr. 9, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 846,791

Int. Cl.[2] H01M *6/36*

U.S. Cl. 429—112 **9 Claims**



1. A thermal primary battery comprising at least one cell element including an anode which melts at the operating temperature of the battery and which comprises a metal selected from the group consisting of alkali metals, alkaline earth metals and alloys thereof, and a homogeneous mixture of a fusible electrolyte, a depolarizer consisting essentially of iron pyrite and a bonder, and a combustible heat generating pellet for melting the anode and fusing said electrolyte.

4,119,770
ELECTRICAL CELLS AND BATTERIES

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

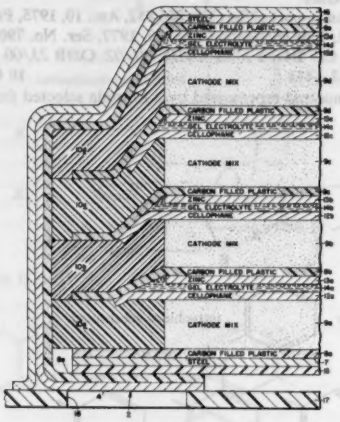
Continuation-in-part of Ser. No. 684,370, May 7, 1976, abandoned, and a continuation-in-part of Ser. No. 589,334, Jun. 23, 1975, abandoned, and a continuation-in-part of Ser. No. 647,590, Jan. 8, 1976, Pat. No. 4,007,472, and a continuation-in-part of Ser. No. 495,628, Aug. 8, 1974, abandoned. This application Jan. 24, 1977, Ser. No. 761,651

Int. Cl.[2] H01M *6/46*

U.S. Cl. 429—152 **9 Claims**

4. A thin flat laminar cell comprising a zinc anode, a manganese dioxide cathode, a separator consisting essentially of regenerated cellulose between said anode and said cathode,

and an aqueous acidic electrolyte containing ammonium chloride and zinc chloride permeating said anode, said separator



and said cathode, said cathode being in slurry form in said aqueous electrolyte.

4,119,771

NEGATIVE COBALT ELECTRODE FOR AN ALKALINE STORAGE BATTERY

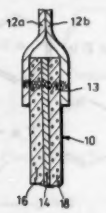
Nikolaus Saridakis, Brunswick, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed May 25, 1976, Ser. No. 690,048

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1975, 2524774

Int. Cl.² H01M 2/02

U.S. Cl. 429—178 **8 Claims**



1. A negative cobalt electrode for an alkaline storage battery, comprising a layered structure including a center layer of compact, sintered cobalt powder forming an electrically conductive supporting framework, and two outer layers of porous, sintered cobalt powder, one on each side of the center layer, and forming the electrochemically active surfaces of the electrode, with the center layer being denser than the two outer layers.

4,119,772

LEAD ACID CELLS AND BATTERIES

Kenneth Peters, Worsley; Sidney Fewster; Frank Wilson, both of Bolton, and Kevin David Nicholas Kearney, Chobham, all of England, assignors to Chloride Group Limited, London, England

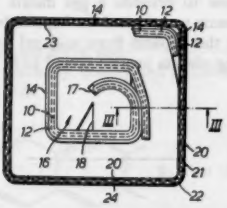
Continuation of Ser. No. 626,778, Oct. 29, 1975, Pat. No. 4,053,695. This application Aug. 17, 1977, Ser. No. 825,471

Claims priority, application United Kingdom, Oct. 31, 1974, 47470/74; May 23, 1975, 22805/75

The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.

Int. Cl.² H01M 6/04

U.S. Cl. 429—204 **19 Claims**



1. A sealed lead acid cell having electrodes comprising metallic supports which minimize the evolution of hydrogen and which are separated by at least one layer of separator material, the support of the positive electrode or electrodes having positive active material deposited thereon and the support of the negative electrode or electrodes having negative active material deposited thereon, the capacity of the negative electrodes being arranged to be at least as great as the capacity of the positive electrodes, characterized in that the supports for the electrodes are in the form of a mesh or grid affording an integral current collecting strip or bar along at least one edge which will be the top or bottom edge of the structure when assembled in a cell wherein the thickness of the electrodes is less than 3 mm, the thickness of the separator is in the range of 10% to 200% of the thickness of the electrodes and the volume, E, of the electrolyte in the cell in relation to the sum of the pore volume of the separators, X, and the pore volume of the positive and negative active materials, Y, is not greater than $2X + Y$.

4,119,773

OLEFIN POLYMERIZATION CATALYST

Anthony N. Speca, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jun. 22, 1977, Ser. No. 808,942

Int. Cl.² C08F 4/02

U.S. Cl. 526—130 **15 Claims**

1. A process for the preparation of an olefin polymerization catalyst which comprises:

(a) depositing on an inorganic support material, the chromium (III) compound preformed obtained from the reaction of a chromium (III) carboxylate with an aluminum alkoxide; and

(b) heating said support material having the chromium (III) reaction product deposited thereon in a non-reducing atmosphere above 300° C. up to the decomposition temperature of the support material.

4,119,774
HEPARIN PURIFICATION METHOD

Lars-Olov Andersson, Knivsta, and Erik Yngve Holmer, Bromma, both of Sweden, assignors to AB Kabi, Stockholm, Sweden

Filed Mar. 2, 1977, Ser. No. 773,504
Int. Cl.[2] A61K *31/725*
U.S. Cl. 536—21 11 Claims

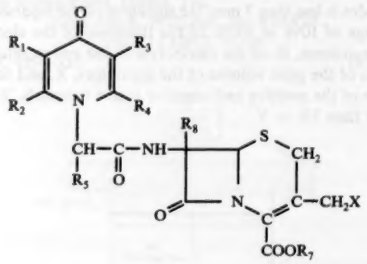
1. A method for purifying a crude heparin preparation to provide a heparin preparation of enhanced heparin specific activity, which method comprises the combination of steps of (a) contacting the starting heparin preparation with a water-insoluble gel matrix having adsorbently bound to it a heparin-binding plasma protein selected from antithrombin and inter-α-trypsin inhibitor to provide a gel matrix with adsorbently bound said plasma protein and the heparin bound thereto, and (b) separating the heparin from said gel matrix having said heparin-binding plasma protein bound to it.

4,119,775
4-OXO-1-PYRIDINYL CEPHALOSPORIN DERIVATIVES

Ronald E. Bambury; Michael L. Edwards, both of Cincinnati, and Laird F. Miller, Loveland, all of Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 508,999, Sep. 27, 1974, which is a continuation-in-part of Ser. No. 413,565, Nov. 7, 1973, abandoned. This application Oct. 9, 1975, Ser. No. 621,206
Int. Cl.[2] C07D *501/34, 499/72;* A61K *31/545, 31/43*
U.S. Cl. 544—28 7 Claims

1. A 7-[(4-oxo-1-pyridinyl)acetylamino]cephalosporin derivative having the formula:



wherein

R_1, R_2, R_3 and R_4 are each selected from the group consisting of hydrogen, halogen, loweralkyl having from 1 to 4 carbon atoms, trifluoromethyl, carboxy, carbomethoxy, carbethoxy and when R_1 is taken in combination with R_2 forms the cyclic radical $—CH_2CH_2CH_2CH_2—$ and $—CH=CH—CH=CH—$;

R_5 is selected from the group consisting of hydrogen, methyl, carboxy, carbomethoxy and carbethoxy;

X is selected from the group consisting of hydrogen, hydroxy, acetoxy and N-pyridinium;

R_7 is selected from the group consisting of hydrogen, alkanoyloxymethyl, alkanoylaminomethyl, alkoxycarbonylaminomethyl and p-(alkanoyloxy)benzyl in which the alkanoyl or alkoxy group contains from 1 to 5 carbon atoms;

R_8 is hydrogen or methoxy; and

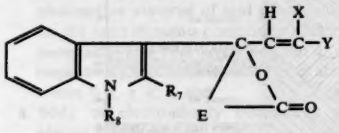
the pharmaceutically acceptable salts thereof.

4,119,776
VINYL PHTHALIDE COLOR FORMERS

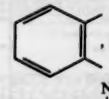
Sheldon Farber, Appleton, Wis., assignor to NCR Corporation, Dayton, Ohio

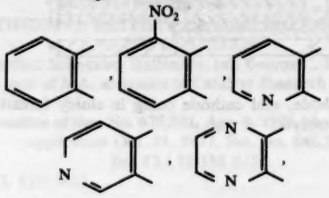
Continuation-in-part of Ser. No. 566,852, Apr. 10, 1975, Pat. No. 4,022,771. This application Apr. 25, 1977, Ser. No. 790,627
Int. Cl.[2] B41M *5/22;* C07D *491/02;* C09B *23/00*
U.S. Cl. 542—441 10 Claims

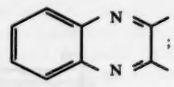
1. A compound represented by a formula selected from:



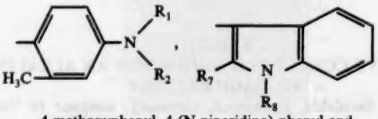
(a)

wherein E is  , tetrachloro-substituted

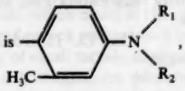


and  ;

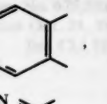
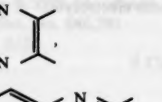
X and Y are ,



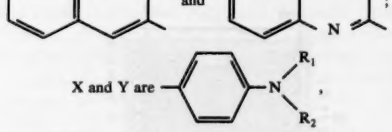
4-methoxyphenyl, 4-(N-piperidino) phenyl and 4-(N-pyrrolidino)phenyl;
and R_1, R_2, R_7 and R_8 are alkyl;

provided when X is  ,

Y is X and E is ;

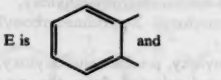
when X is  , Y is 

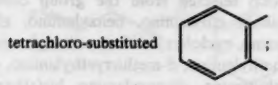
and E is , tetrachloro-substituted



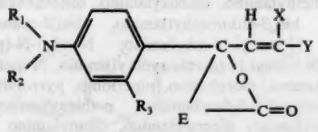
and when X is 4-methoxyphenyl, Y is X and

-continued

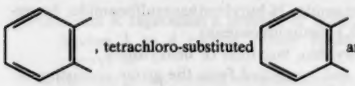


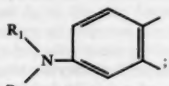


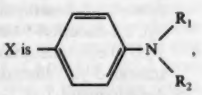
(b)



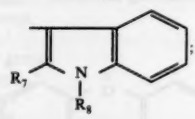
wherein E is



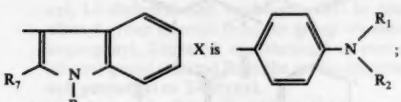




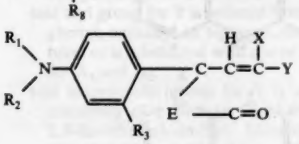
4-(N-piperidino)phenyl and 4-(N-pyrrolidino)phenyl;
Y is 4-(N-piperidino)phenyl, 4-(N-pyrrolidino)phenyl, phenyl and



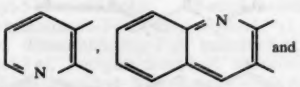
R_1 is hydrogen, alkyl and phenyl;
R_2 is alkyl and cycloalkyl;
R_3 is hydrogen and alkoxy having 1 to 4 carbons; and
R_7 and R_8 are alkyl;
provided when Y is phenyl or

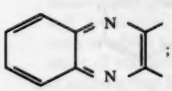


(c)



wherein E is





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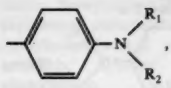
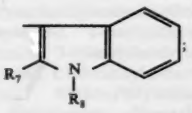
X is

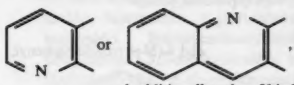


4-(N-piperidino)phenyl, 4-(N-pyrrolidino)phenyl;
Y is any X, hydrogen and

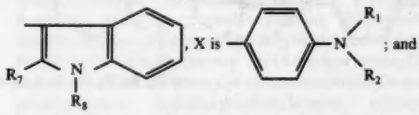
(b)

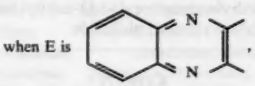


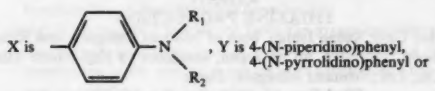
R_1, R_2, R_7 and R_8 are alkyl; and
R_3 is hydrogen, methoxy, ethoxy and chlorine;
provided when E is

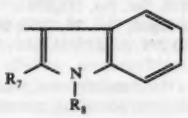


and additionally when Y is hydrogen or

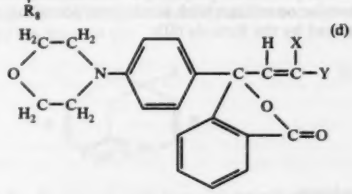




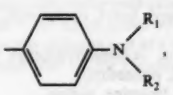




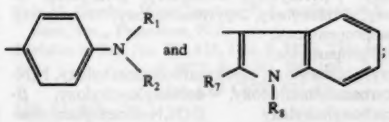
(d)



wherein X is



4-(N-piperidino)phenyl and 4-(N-pyrrolidino)phenyl;
Y is hydrogen, phenyl,



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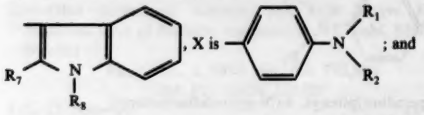
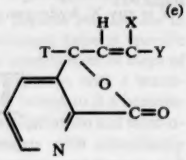
R_1, R_2, R_7 and R_8 are alkyl; provided when Y is



, X is

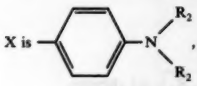
; and



(e)

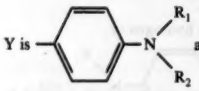
wherein T is kairol-6-yl and julolidin-9-yl;

X is

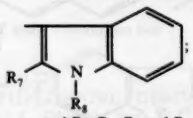


, 4-(N-piperidino)phenyl and 4-(N-pyrrolidino)phenyl;

Y is



and



and R_1, R_2, R_3 and R_8 are alkyl.

8. 3-(p-diethylaminophenyl)-3-[2-methyl-bis-1,1-(p-dimethylaminophenyl)ethyleno-2] phthalide.

4,119,777

THIAZINE PRODUCTION

Hideo Usui; Sadao Ishige, both of Minami Ashigara, and Keiso Saeki, Fujimiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara, Japan

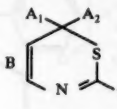
Filed Dec. 17, 1976, Ser. No. 751,874

Claims priority, application Japan, Dec. 23, 1975, 50/153706

Int. Cl.[2] **C07D** *279/14, 279/16*

U.S. Cl. 544—6 **9 Claims**

1. A process for preparing a thiazine derivative, which forms a color on contact with an electron-accepting material, represented by the formula (II):



(II)

wherein

A_1 and A_2, which may be the same of different, each is substituted with one or more substituents selected from the group consisting of

methyl, ethyl, propyl, butyl, cyclohexyl,

trifluoromethyl,

α-methylbenzyl, α, α-dimethylbenzyl, 1,1-diphenylethyl, naphthylmethyl, phenethyl,

fluorine, chlorine, bromine, iodine,

methoxy, ethoxy, propoxy, butoxy, cyclohexyloxy,

phenethyloxy, benzyloxy, naphthylmethyloxy,

phenoxy, naphthoxy,

α-pyridyloxy, γ-pyridyloxy, α-furyloxy, β-furyloxy, α-thienyloxy, β-thienyloxy, 2-pyrimidinyloxy, triazynyloxy

allyloxy, isopropenyloxy,

ethynyloxy, propargyloxy,

acetonyloxy, phenacyloxy, ethoxycarbonylmethyloxy, N,N-diethylcarbamoylmethyloxy, acetonylmethyloxy, β-ethoxycarbonylethyloxy β-(N,N-dimethylamino)ethyloxy, β-methoxyethyloxy, β-cyanoethyloxy, β-chloroethyloxy, β-methanesulfonylethyloxy,

acetoxy, benzoyloxy, 2-pyridinecarbonyloxy, ethoxycarbonyloxy,

methanesulfonyloxy, p-toluenesulfonyloxy,

an amino group selected from the group consisting of —NH_2, anilino, ethylamino, benzylamino, allylamino, propargylamino, cyclohexylamino, acetonylamino, ethoxycarbonylmethylamino, β-methoxyethylamino, dimethylamino, diethylamino, dibenzylamino, bis(ethoxymethyl-)amino, bis(β-chloroethyl)amino, bis(β-cyanoethyl-)amino, N-benzyl-N-ethylamino, N-ethyl-N-(p-tolyl-)amino, N-benzyl-N-(β-ethoxyethyl)amino, N-methyl-N-phenacylamino, morpholino, piperidino, pyrrolidino, α-pyridylamino, β-furylamino, α-thienylamino, 2-pyrimidinylamino, dipropylamino, dibutylamino or N-ethyl-(p-bromoanilino),

acetamido, benzamido, α-pyridinecarboxamido, butoxycarbonylamino, 3,3 diethylureido, N-ethylacetamido, p-toluenesulfonamido, N-butylmethanesulfonamido, benzothioamide, 3,3-diethylthioureido,

methylthio, ethylthio, butylthio or benzylthio,

or unsubstituted and is selected from the group consisting of

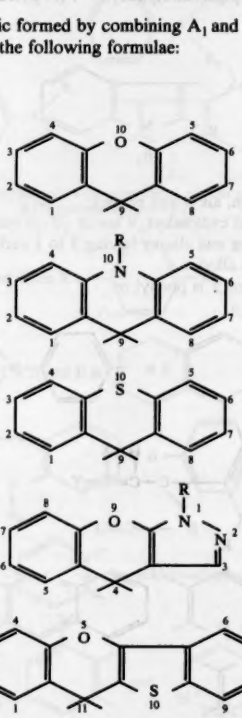
phenyl,

naphthyl,

biphenyl,

a five- or six-membered heterocyclic ring selected from the group consisting of p-julolidyl, 1,2,3,4-tetrahydroquinolin-6-yl, 3,3-dimethylindolin-5-yl, 3,4-methylenedioxyphenyl, 1,2-dimethyl-5-benzimidazolyl, 10-ethylphenothiazin-3-yl, 10-ethylphenoxazin-3-yl, 9-ethylcarbazol-3-yl, dibenzofuran-3-yl, dibenzothiophen-3-yl, quinolin-8-yl, 1,2-dimethylindol-3-yl, 1-ethylimidazol-3-yl, benzo {b} furan-3-yl, benzo {b} thiophen-3-yl, 1-ethylpyrrol-3-yl, 3-furyl, 3-thienyl, 2-thiazolyl, 2-benzoxazolyl, 2-pyridyl or 4-quinolyl,

a heterocyclic formed by combining A_1 and A_2 represented by one of the following formulae:



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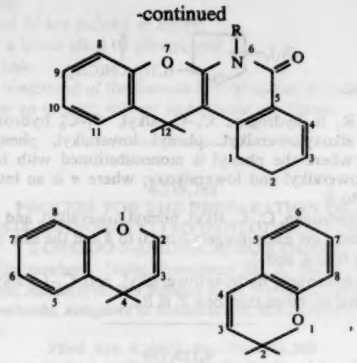


wherein R represents a straight or branched alkyl group having 1 to 4 carbon atoms, benzyl, phenethyl or phenyl, or

a fluorene group formed by combining A_1 and A_2, at least one of A_1 and A_2 or the ring formed by combining A_1 and A_2 represents an electron donating aryl group having a said amino substituent group for A_1 and A_2 as a substituent or represents an electron donating heterocyclic group, respectively;

the ring B represents an aromatic hydrocarbon ring selected from the group consisting of a benzene ring, a naphthalene ring, a biphenyl ring or a tetralin ring or a heterocyclic ring selected from the group consisting of a pyrrole ring, a furan ring, a thiophene ring, an indole ring, a benzofuran ring, a benzothiophene ring, a carbazole ring, a dibenzofuran ring, a dibenzothiophene ring, a julolidine ring, a tetrahydroquinoline ring, a benzimidazole ring, a benzoxazole ring, a benzothiazole ring or a 1,3-benzo{d}dioxole ring; and

Y represents

a hydrogen atom,

an aliphatic group,

an aryl group,

a heterocyclic group,

an amino group,

an amido group,

an oxy group or

a thio group

said aliphatic group for Y is an unsubstituted straight chain, branched chain or cyclic alkyl of 1 to 18 carbon atoms, a straight chain, branched chain or cyclic alkyl of 1 to 18 carbons substituted with one or more of a halogen atom or a cyano group, an aralkyl group selected from the group consisting of benzyl, α-methylbenzyl, α,α-dimethylbenzyl, 1,1-diphenylethyl, naphthylmethyl or phenethyl, an alkenyl group selected from the group consisting of allyl, isopropenyl, 2-butenyl, cyclohexenyl or cinnamyl, or an alkynyl group selected from the group consisting of ethynyl, propargyl or 2-butynyl;

said aryl group for Y is selected from the group consisting of phenyl, naphthyl or biphenyl, each of which is unsubstituted or is substituted with one or more of said substituents for A_1 and A_2;

said heterocyclic group for Y is selected from the group consisting of p-julolidyl, 1,2,3,4-tetrahydroquinolin-6-yl, 3,3-dimethylindolin-5-yl, 3,4-methylenedioxyphenyl, 1,2-dimethyl-5-benzimidazolyl, 10-ethylphenothiazin-3-yl, 10-ethylphenoxazin-3-yl, 9-ethylcarbazol-3-yl, dibenzofuran-3-yl, dibenzothiophen-3-yl, quinolin-8-yl, 1,2-dimethylindol-3-yl, 1-ethylimidazol-3-yl, benzo{b}furan-3-yl, benzo{b}thiophen-3-yl, 1-ethylpyrrol-3-yl, 3-furyl, 3-thienyl, 2-thiazolyl, 2-benzoxazolyl, 2-pyridyl or 4-quinolyl, each of which is unsubstituted or is substituted with one or more of said substituents for A_1 and A_2;

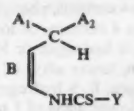
said amino group for Y is selected from the group consisting of ethylamino, butylamino, octadecyl amino, cyclohexyl amino, benzylamino, diphenylmethylamino, naphthylmethylamino, phenethylamino, allyamino, 2-butenylamino, cyclohexenylamino, propargylamino, anilino, toluidino, anisidino, xylidino, p-nitrophenylamino, p-bromophenylamino, α-naphthylamino, pyridylamino, quinolylamino, acridinylamino, bennzothiazolyamino, triazinylamino, furylamino, thienylamino, β-(N,N-dimethylamino(ethylamino) β-methoxyethylamino, β-cyanoethylamino, β-chloro ethylamino, ethoxycarbonylmethylamino, cyanomethylamino, ethoxy methylamino, ethylthiomethylamino, 4-(methylthio)-butylamino, trifluoromethylamino, 2-thiazolylmethylamino, (p-tolylsulfonyl)methylamino, 1,1-dimethyl-3-oxobutylamino, trimethylsilylamino, triphenylsilylamino, trimethoxysilylamino, diethylamino, dibenzylamino, diphenylamino, N-benzyl-N-ethylamino, N-ethyl-phenylamino bis(β-methoxyethyl)amino, morpholino, piperidino, piperazino, pyrrolidino or tetrahydroquinolino;

said amido group for Y is selected from the group consisting of acetamido, trifluoroacetamido, cyclohexanecarboxamido, benzamido, α-pyridinecarboxamido, α-furancarboxamido, butoxycarbonylamino, (butylthio) carbonylamino, 3,3-diethylureido, benzothioamido, 3,3-diethylthioureido, α-thienylthiocarbonylamino, butoxythiocarbonylamino, methanesulfonamido, p-toluenesulfonamido, dimethylaminosulfonylamino, (N-phenylbenzimidoyl)amino, (N-phenyl-trimethylacetoimidoyl)amino, (N-methylbenzimidoyl)amino {N-(4-methoxyphenyl)benzimidoyl}amino, (N-phenyl-4-chlorobenzimidoyl)-amino, pivaloylamino, isobutoxycarbonylamino, ethoxycarbonylamino, isobutyrylamino, butyrylamino, valerylamino, octanoylamino, decanoylamino, dodecanoylamino, tetradecanoylamino, octadecanoylamino, phenoxyacetylamino, methoxycarbonylamino or benzyloxycarbonylamino;

said oxy group for Y is selected from the group consisting of hydroxy or methoxy, each of which is unsubstituted or is substituted with one or more of said substituents for A_1 and A_2; and

said thio group for Y is selected from the group consisting of methylthio, ethylthio, butylthio, cyclohexylthio, benzylthio, allylthio, propargylthio, phenylthio, α-pyridylthio or 2-benzothiazolylthio;

which comprises oxidizing a thioamide derivative represented by the formula (I):



(I)

wherein A_1, A_2, ring B, and Y are as described above with an oxidizing agent selected from the group consisting of a metal oxide, a quinone, an inorganic peroxide or an organic peroxide under acid conditions at a temperature of about −10° C. to about 50° C. for all oxidizing agents except the quinone and at a temperature of about 40° C. to about 100° C. for the quinone.

4,119,778

THIOOXIME CEPHALOSPORIN DERIVATIVES

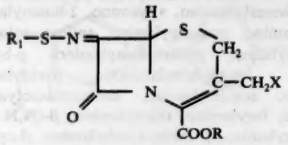
Eric M. Gordon, West Trenton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 748,425, Dec. 8, 1976. This application Nov. 9, 1977, Ser. No. 850,106

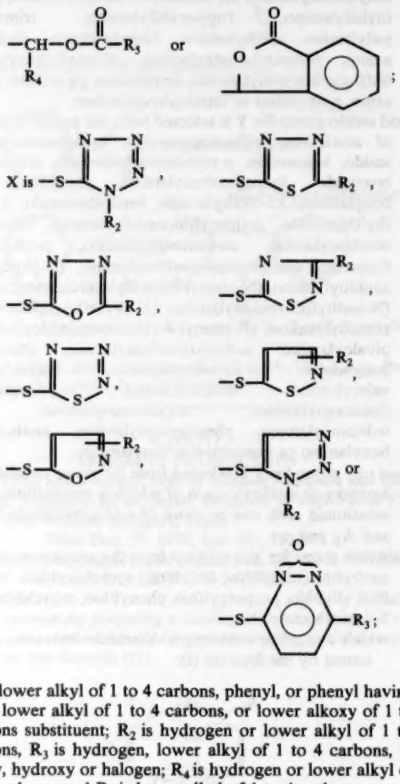
Int. Cl.[2] C07D *501/18*

U.S. Cl. 544—26 **9 Claims**

1. A compound of the formula:



wherein R is hydrogen, lower alkyl of 1 to 4 carbons, benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, tri(lower alkyl)silyl, lower alkoxymethyl,



R_1 is lower alkyl of 1 to 4 carbons, phenyl, or phenyl having a halo, lower alkyl of 1 to 4 carbons, or lower alkoxy of 1 to 4 carbons substituent; R_2 is hydrogen or lower alkyl of 1 to 4 carbons, R_3 is hydrogen, lower alkyl of 1 to 4 carbons, methoxy, hydroxy or halogen; R_4 is hydrogen or lower alkyl of 1 to 4 carbons; and R_5 is lower alkyl of 1 to 4 carbons.

4,119,779

1,3,5-s-HEXAHYDROTRISUBSTITUTED TRIAZINES

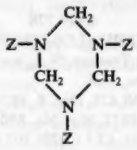
Nathaniel Grier, Englewood, and Bruce E. Witzel, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 11, 1977, Ser. No. 795,674

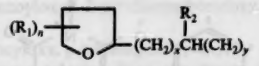
Int. Cl.² C07D *263/04, 405/06, 405/10, 263/06*

U.S. Cl. 544—215 **15 Claims**

1. A compound having the formula:



where each Z is R_3 or



where R_1 is hydrogen, C_1–C_8 alkyl, C_1–C_8 hydroxyalkyl, C_1–C_8 alkoxyloweralkyl, phenyl loweralkyl, phenyl and phenyl where the phenyl is monosubstituted with halogen, nitro, loweralkyl and loweralkoxy; where n is an integer of from 1 to 3;

R_2 is hydrogen, C_1–C_8 alkyl, phenyl loweralkyl, and phenyl, x and y are each integers from 0 to 4 and the sum of x and y is 0 to 4; and

R_3 is hydrogen, hydroxyloweralkyl, and C_1–C_8 alkyl, provided no more than one Z is R_3.

4,119,780

2(ISOPROPYLDITHIO)BENZIMIDAZOLE

Alfred Bay Sullivan, Wadsworth, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 508,047, Sep. 23, 1974, Pat. No. 4,006,155, which is a continuation-in-part of Ser. No. 266,458, Jun. 26, 1972, Pat. No. 3,859,297, which is a continuation-in-part of Ser. No. 880,893, Nov. 28, 1969, Pat. No. 3,705,923. This application Oct. 22, 1976, Ser. No. 734,996

Int. Cl.² C07D *235/28*

U.S. Cl. 548—329 **1 Claim**

1. 2-(Isopropyldithio)benzimidazole.

4,119,781

PROCESS FOR PREPARING 4-SUBSTITUTED IMIDAZOLE COMPOUNDS

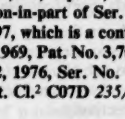
Joseph J. Lewis, and Robert L. Webb, both of West Chester, Pa., assignors to SK&F Lab Co., Carolina, P.R.

Continuation-in-part of Ser. No. 626,948, Oct. 29, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 771,044

Int. Cl.² C07D *233/64, 233/84*

U.S. Cl. 548—337 **14 Claims**

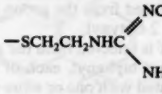
1. A process for preparing a compound of the formula:



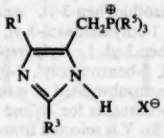
in which:

R^1 is hydrogen or lower alkyl;

R^2 is methoxy, ethoxy, n-propoxy, n-butoxy, i-butoxy, t-butoxy, $—SCH_2CH_2NH_2$ or



and R^3 is hydrogen, lower alkyl, trifluoromethyl, benzyl, amino or $—SR^4$ where R^4 is lower alkyl, phenyl, benzyl or chlorobenzyl, comprising reacting a compound of the formula:



in which:
R^1 and R^3 are defined as above;
R^5 is a lower alkyl or phenyl; and
X is halo,
with a compound of the formula R^2—H where R^2 is defined as above in an organic solvent under basic conditions.

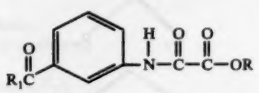
4,119,782
PROCESS FOR THE PREPARATION OF 5-(4-AMINOBUTYL) HYDANTOIN AND/OR 1-UREIDO-5-AMINOCAPRONAMIDE
Erik Konijnenberg, Nuth; Franciscus H. A. M. J. Vandenbooren, Maastricht, and Egidius J. M. Verheijen, Born, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands
Filed Apr. 4, 1977, Ser. No. 784,368
Claims priority, application Netherlands, Apr. 9, 1976, 7603742
Int. Cl.[2] C07D *233/76;* **C07C** *127/15*
U.S. Cl. 548—313 **4 Claims**

1. In a process for preparing 5-(4-amino-butyl) hydantoin including hydrogenating 5-(3-cyanopropyl) hydantoin in the liquid phase in the presence of ammonia and a hydrogenation catalyst containing nickel, cobalt or both, the improvement wherein the hydrogenation is conducted in the presence of greater than 0.4 and not more than about 2.0 moles of a dissolved alkali hydroxide per mole of hydantoin to be hydrogenated.

3. In a process for preparing 5-(4-amino-butyl) hydantoin and 2-ureido-6-aminocapronamide including hydrogenating a mixture of 5-(3-cyanopropyl) hydantoin and 2-ureido-5-cyanovaleramide in the liquid phase in the presence of ammonia and a hydrogenation catalyst containing nickel, cobalt or both, the improvement wherein the hydrogenation is conducted in the presence of greater than 0.4 and not more than about 2.0 moles dissolved alkali hydroxide per mole of compound to be hydrogenated.

4,119,783
3'LOWER ALKYLCARBONYL OXANILIC ACID ESTERS
Charles M. Hall, and John B. Wright, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Feb. 18, 1977, Ser. No. 769,874
Int. Cl.[2] C07C *101/44;* **A61K** *31/195*
U.S. Cl. 560—43 **4 Claims**

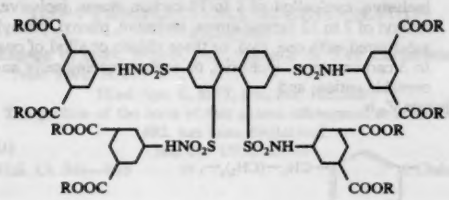
1. A compound of the formula



wherein R_1 is alkyl of one to three carbon atoms, inclusive, and R is alkyl of four to eight carbon atoms, inclusive, or $(CH_2)_n$-phenyl wherein *n* is one or two.

4,119,784
ANIONIC SUBSTITUTED SULFONAMIDO BIPHENYLS
Ransom Brown Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Filed Jul. 1, 1977, Ser. No. 812,014
Int. Cl.[2] C07C *63/32, 69/76*
U.S. Cl. 560—44 **3 Claims**

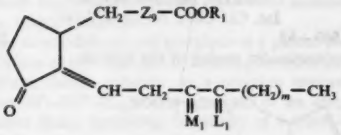
1. A compound of the formula:



wherein R is selected from the group consisting of alkali metal; and the pharmaceutically acceptable salts thereof.

4,119,785
3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-12,13(E)-DIDEHYDRO-13,14-DIHYDRO-9-DEOXY-PGD$_1$ COMPOUNDS
David C. Peterson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 614,244, Sep. 17, 1975. This application Jun. 23, 1977, Ser. No. 809,243
Int. Cl.[2] C07C *69/76, 177/00*
U.S. Cl. 560—53 **25 Claims**

1. A prostaglandin analog of the formula



wherein *m* is one to 5, inclusive;
wherein M_1 is

or

wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;
wherein L_1 is

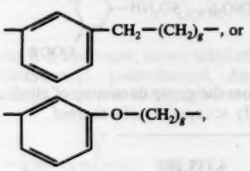
or a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the provisio that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms,

inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_9 is



wherein *g* is one, 2, or 3.

4,119,786

3,7-INTER-M-PHENYLENE-4,5,6-TRINOR-12,13(E)-DIDEHYDRO-13,14-DIHYDRO-9,10-DIDEHYDRO-9-DEOXY-PGD$_1$ COMPOUNDS

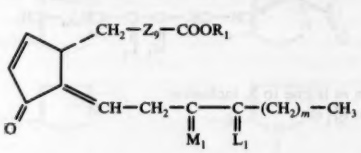
David C. Peterson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 614,244, Sep. 17, 1975. This application Jun. 23, 1977, Ser. No. 809,265

Int. Cl.[2] C07C *69/76, 177/00*

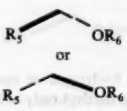
U.S. Cl. 560—53 **25 Claims**

1. A prostaglandin analog of the formula



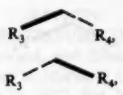
wherein *m* is one to 5, inclusive;

wherein M_1 is

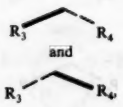


wherein R_5 and R_6 are hydrogen or methyl, with the proviso that one of R_5 and R_6 is methyl only when the other is hydrogen;

wherein L_1 is



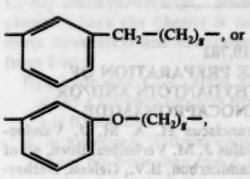
or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the provisio that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation; and

wherein Z_9 is



wherein *g* is one, 2, or 3.

4,119,787

11-DEOXY-CIS-13-PGE$_2$ ANALOGS

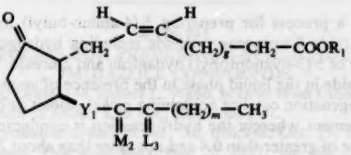
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 595,869, Jul. 14, 1975, Pat. No. 4,026,909. This application Mar. 3, 1977, Ser. No. 774,181

Int. Cl.[2] C07C *177/00*

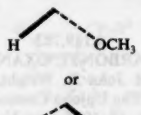
U.S. Cl. 560—121 **7 Claims**

1. A compound of the formula



wherein Y_1 is cis—CH=CH—;

wherein *g* is 2, 3, or 4; wherein M_2 is



wherein L_3 is

or a mixture of

wherein R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein *m* is 1 to 5, inclusive; and

wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms,

inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms, inclusive, or a pharmacologically acceptable cation.

4,119,788

α-OXY(OXO) SULFIDES AND ETHERS

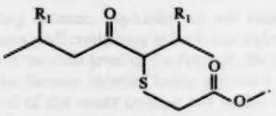
William J. Evers, Red Bank, and Howard H. Heinsohn, Jr., Hazlet, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 730,538, Oct. 7, 1976, Pat. No. 4,045,491. This application Mar. 31, 1977, Ser. No. 783,487

Int. Cl.[2] C07C *149/20*

U.S. Cl. 560—152 **3 Claims**

1. A compound having the structure:



wherein R_1 is selected from the group consisting of hydrogen and methyl wherein each of the R_1 groups in the molecule is the same.

4,119,789

FLAME RETARDANT COMPOSITIONS

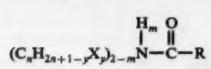
Harry Braus, Cincinnati, Ohio, and Jay R. Woltermann, Memphis, Tenn., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 505,287, Sep. 12, 1974, Pat. No. 3,979,545. This application Jun. 21, 1976, Ser. No. 698,619

Int. Cl.[2] C07C *125/06, 127/15, 103/24, 103/47*

U.S. Cl. 560—161 **7 Claims**

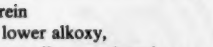
1. A halogen containing amide of the formula

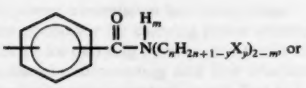


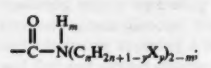
wherein

R is lower alkoxy,

lower alkoxy carbonyl,







X is chlorine or bromine;

m is 0 or 1;

n is 1–6;

y is 1–13; and

when R is lower alkoxy and n is 1 and m is 0, y is 2–3.

4,119,790

LOW PRESSURE CATALYTIC ETHYNYLATION PROCESS

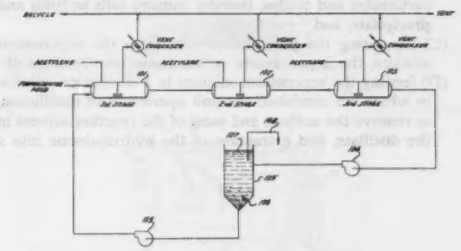
Eugene V. Hort, Wayne, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 6, 1977, Ser. No. 785,033

The portion of the term of this patent subsequent to Nov. 18, 1992, has been disclaimed.

Int. Cl.[2] C07C *29/00*

U.S. Cl. 568—855 **6 Claims**



1. An improved low pressure catalytic ethynylation process for producing butynediol at a high rate of production, safely, and without forming an excessive amount of undesirable by-products, which comprises:

reacting formaldehyde and acetylene at a partial pressure of acetylene of less than about 2 atmospheres, in an aqueous medium, under agitation, at a reaction temperature of about 80°–105° C., in the presence of an ethynylation catalyst slurry consisting essentially of a water-insoluble complex cuprous acetylide powder generated from a catalyst precursor material containing greater than 20% and less than 35% by weight of copper, 0 to about 3% by weight of bismuth, and a magnesium silicate carrier therefor.

4,119,791

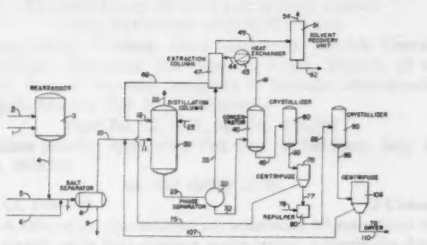
AQUEOUS RECOVERY OF HYDROQUINONE

William Shepherd Hollingshead, Cuyahoga Falls, and Edward Norbert Nowak, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 14, 1977, Ser. No. 833,204

Int. Cl.[2] C07C *39/08*

U.S. Cl. 568—768 **8 Claims**



1. In a process for making hydroquinone comprising the steps of:

(A) reacting a feed stream comprising p-diisopropylbenzene dihydroperoxide

(1) in a reaction solvent selected from the group consisting of methyl isopropyl ketone, diisopropyl ketone, methyl isobutyl ketone, cyclohexanone, 1-pentanol, 3-pentanol, diethyl ether, diisopropyl ether, ethylisopropyl ether and mixtures of the foregoing with acetone;

(2) with an acid catalyst selected from the group consist-

ing of H_3PO_4, $HClO_4$, p-toluene-sulfonic acid, SO_2,HBF_4, H_2SiF_6, BF_3 and any Lewis acid in a concentration of from 0.05 to 3.0 weight percent of the reaction mixture;

(3) with less than three weight percent water present in the reaction mixture;

(4) within a temperature range of from 50° to 100° C. to form hydroquinone and acetone;

(B) adjusting the pH of the mixture to from about 2.5 to 5.5 after the reaction by adding a base selected from the group consisting of anhydrous ammonia, methylamines, triethylamines, and alkali and alkaline earth metal hydroxides, carbonates and oxides, thereby causing salts to form and precipitate; and

(C) separating the precipitated salts from the supernatant mixture; the improvement which comprises the steps of:

(D) feeding the supernatant mixture to a distillation column in which are combined the unit operations of distillation, to remove the acetone and most of the reaction solvent in the distillate, and extraction of the hydroquinone into a water phase which exits the distillation column together with an organic phase as the distillation bottoms stream;

(E) subjecting the bottoms to a phase separation wherein the aqueous phase contains most of the hydroquinone and the organic phase contains substantially all the impurities and a small quantity of hydroquinone;

(F) concentrating the aqueous phase from step (E);

(G) crystallizing hydroquinone from the concentrated stream from step (F);

(H) separating the crystals from step (G) from the supernatant aqueous liquid which is recycled to the distillation step (D);

(I) repulping the crystals in acetone;

(J) crystallizing the hydroquinone from the acetone; and

(K) separating the hydroquinone crystals from the supernatant acetone which is recycled to the distillation column (D).

4,119,792

MELTING FURNACE

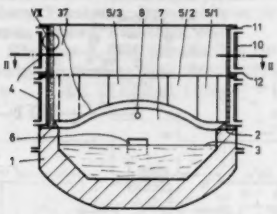
Emil A. Elsner, Baden-Baden; Dieter Ch. Ameling, Neu-Wulmstaf; Rolf Assenmacher, Willstätt, and Gerhard Fuchs, Wilstatt-Legelshurst, all of Fed. Rep. of Germany, assignors to Korf-Stahl AG., Baden-Baden, Fed. Rep. of Germany

Filed Feb. 4, 1977, Ser. No. 765,789

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 2631982

Int. Cl.[2] F27D *1/12*

U.S. Cl. 13—32 19 Claims



1. A melting furnace, especially an arc melting furnace, having a furnace wall containing at least one water cooling box disposed above the melt level of the furnace, the surface of the box facing the furnace interior being provided with projections, said wall of the water cooling box which faces the furnace interior having a thickness of at least 15 mm, the projections being formed of profile irons, and a refractory composition pre-applied on said surface and said projections and serving as a refractory protective layer prior to operation of said furnace, thereby to prevent damage to said surface and projection and facilitating adhesion of a further refractory protective layer of slag forming during operation of said furnace.

4,119,793

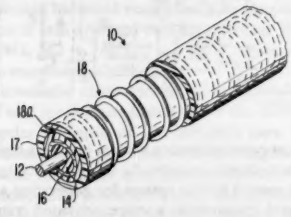
TRANSMISSION LINE BREAKDOWN VOLTAGE

Mario Rabinowitz, Menlo Park, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 26, 1976, Ser. No. 680,261

Int. Cl.[2] H01B *9/02*

U.S. Cl. 174—36 19 Claims



1. A power transmission line comprising:

a first conductor for carrying power current; a second conductor for carrying power current, said second conductor colinearly surrounding said first conductor; a dielectric insulating region separating said first and second conductors; and means disposed coaxially externally of said second conductor applying a magnetic field colinearly with said first and second conductor for producing a net helical magnetic field having a pitch dependent upon the magnitude of the magnetic field externally applied by said magnetic field applying means and upon the magnitude of the magentic field induced between said first and second conductors by power current.

4,119,794

COMPOSITE BOARD STRUCTURE INCLUDING CORRUGATED FIBERBOARD AND COMBINATION SURFACE-COVERING AND ELECTRICAL-WIRING ARRANGEMENT INCORPORATING THE BOARD STRUCTURE

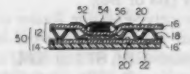
Masamitsu Matsuki, Sagamihara, Japan, assignor to Nissan Motor Company, Ltd., Japan

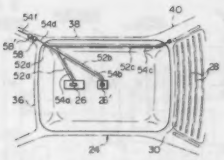
Filed Jul. 15, 1977, Ser. No. 816,273

Claims priority, application Japan, Jul. 15, 1976, 51-94658[U]

Int. Cl.[2] H02G *3/26, 3/02;* B62D *25/06*

U.S. Cl. 174—68 R 8 Claims





1. A combination surface-covering and electrical-wiring arrangement for use on the inner face of a rigid roof panel of an automotive vehicle, comprising

a composite board structure consisting of a corrugated fiberboard comprising at least one liner having inner and outer faces and at least one corrugated paper medium which is bonded at the tops of its ridges on one side of the paper medium to the inner face of said liner, and

a facing web bonded to one face of said corrugated fiberboard,

the outer face of said liner being left uncovered and formed with at least one length of trough-shaped depression extending irrespective of the directions of said ridges and said corrugated paper medium being at least partially collapsed over its area substantially coextensive with the trough-shaped depression, and

at least one wire harness mounted at least partially in said depression.

4,119,795

SYSTEM FOR TRANSMITTING ASYNCHRONOUS BIT TRANSITIONS OF DATA SIGNALS USING TIME-DIVISION MULTIPLEXING

Ludwig Höelzl, Weidach; Jöerg Mäenhardt, Munich; Konrad Reisinger, Zorneding, and Johannes Singer, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 12, 1977, Ser. No. 814,895

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1976, 2635306

Int. Cl.[2] H04Q *11/20*

U.S. Cl. 178—50 3 Claims

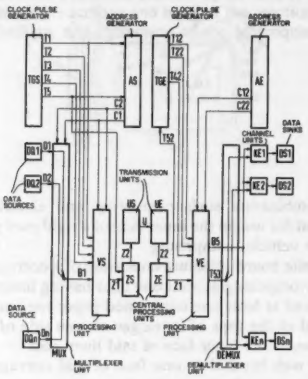
1. A system for transmitting asynchronous bit transitions of data signals using time-division multiplexing, wherein the data signals are applied to a transmit-end multiplexer via a plurality of channels and there are produced with the aid of a transmit-end coarse Raster counter and a fine Raster counter pulse messages in which the bit transitions are signaled from the transmit end to the receive end and the transmit-end multiplexer and a receive-end mutliplexer are controlled with respective transmit-end and receive-end address signals, a clock signal being generated by means of a receive-end fine Raster counter activating the channel unit over which the data signal is applied to a data processing terminal equipment,

wherein the improvement comprises transmit-end and re-

ceive-end registers (SP1, SP2 or SP4, SP5) for each channel (DQ1, DQ2 or DS1, DS2) which store the storage contents of respective transmit-end and receive-end buffer storages (SP3 or SP6) in synchronism with the clock pulse pattern of the address signals (C1, C2 or C12, C22);

a transmit-end and a receive-end bit-transition discriminator (PW1 or PW2) which receives via the respective transmit-end and the receive-end register at one input the old binary digit of the data signal (D1, D2) and at the other input, the new binary digit of the data signal, and which signals a bit transition with a respective transmit-end and a receive-end bit-transition signal when the old and the new digits differ (B3 or B6);

transmit-end and receive-end fine Raster counters (AD1 or AD3) connected respectively to the transmit-end and receive-end register (SP1, SP2 or SP4, SP5) operative to change the counter readings thereof with the bit-transition signal (B3 or B6);



a transmit-end pulse message switch (SW1) operable to read with the bit-transition signal (B3=0) the new binary digit of the data signal and the counter reading of the fine Raster counter (AD1) into the buffer storage (SP3);

the coarse Raster counters being connected on the input side to the registers (SP1, SP2 or SP4, SP5) and on the output side to the buffer storages (SP3 or SP6);

a transmit-end readout switch (SW4) whose operating positions are set by means of the transmit-end coarse Raster counter (AD2), whose inputs (00, 01, 10, 11) are connected sequentially to the locations of the registers (SP1, SP2) in which the individual bits of the pulse message are stored and over whose output the pulse message is delivered; and

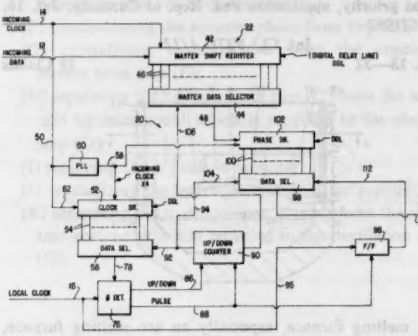
means for comparing the time-slot-pattern bits of the received pulse message and the counter reading of the receive-end fine Raster counter (AD3) operable upon agreement therebetween to generate said clock signal (T53) to activate the channel unit (KE1, KE2) assigned to the address (FIGS. 1, 2 6).

4,119,796
AUTOMATIC DATA SYNCHRONIZER

Emmett Lee Jones, Upper Marlboro, Md., assignor to Versitron, Inc., Washington, D.C.

Filed Nov. 1, 1976, Ser. No. 737,653
Int. Cl.[2] H04L 7/08
U.S. Cl. 178—69.1 20 Claims

1. An automatic data synchronizer comprising first and second inputs for receiving clock and data pulses from a remote location, a local clock input and a data output, a first variable digital delay line coupling said data input to said data output, a second variable digital delay line coupled to said clock pulse input, a phase comparator coupled to the output of said second variable digital delay line and to said local clock input, said comparator supplying a control signal to said second variable delay line for adjusting the delay of said second delay line when the phase difference between signals applied to said local clock input and the output of said second variable delay line exceeds a predetermined amount, said adjustment being in such a direction as to keep said phase difference within

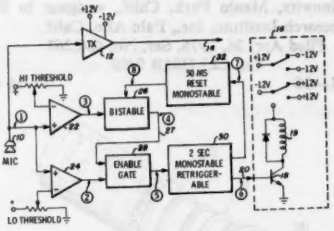


said predetermined amount, and means coupled to said comparator for adjusting the setting of said first variable digital delay line in accordance with the setting of said second variable delay line whereby clock and data signals from a remote location applied to said first and second inputs are delayed a like amount by said first and second delay lines.

4,119,797
VOICE OPERATED SWITCH HAVING AN ACTIVATION LEVEL WHICH IS HIGHER THAN ITS SUSTAINING LEVEL

Walter C. Wollert, Campbell, Calif., assignor to Technology Development Corporation, Sunnyvale, Calif.

Filed Jun. 29, 1977, Ser. No. 811,085
Int. Cl.[2] H04M 1/19
U.S. Cl. 179—1 VC 3 Claims



1. In a voice communication system having a transmitter and a speech microphone acoustically coupled through a gaseous medium to a speech source system for generating a modulation system for said transmitter, a voice activated transmit switch for turning on the transmitter comprising:

first means responsive to the output signal from said microphone and operative to provide first output pulses when the amplitude of said microphone output signal is above a predetermined "high" threshold;

second means responsive to said microphone output signal and operative to provide second output pulses when the amplitude of said microphone output signal is above a "low" threshold level;

bistable means responsive to said first output pulses and operative to switch its state;

gating means responsive to the state of said bistable means and operative to gate said second output pulses; and

monostable means responsive to said gated second output pulses and operative to enable the transmitter, said mono-

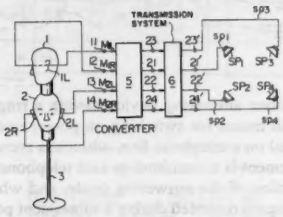
stable means remaining "on" for a predetermined length of time.

4,119,798

BINAURAL MULTI-CHANNEL STEREOPHONY

Makoto Iwahara, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 3, 1976, Ser. No. 720,210
Claims priority, application Japan, Sep. 4, 1975, 50-106505
Int. Cl.[2] H04R 5/00
U.S. Cl. 179—1 GQ 12 Claims



1. Apparatus for deriving signals to be applied to a multi-channel stereophony using N loudspeakers located around a listener at equal distances therefrom, wherein N is at least three, the listener normally being positioned so he is facing in a predetermined angular relationship with respect to said speakers, said predetermined angular position being along a first axis, comprising

a three-dimensional structure located with respect to an axis of a sound source for simulating a human head in shape and dimensions, said sound source axis having a second axis, corresponding with the first axis, said structure having N artificial ears angularly spaced apart from each other about the vertical axis of said structure so that each of said artificial ears assumes a particular angular position relative to said second axis when said structure is oriented about its vertical axis in a given direction;

N microphones mounted respectively in the corresponding positions of said artificial ears for deriving first electrical signals M1, M2 . . . MN;

N audio transmission channels;

an acoustic transfer characteristic being established between each of said speakers and each ear of the listener at differing angular positions of the listener's ears, the transfer characteristic being such that for each angular position of the listener's ear relative to the first axis there is a corresponding angular position between the second axis and an artificial ear, whereby the acoustic transfer characteristic ajk represents the acoustic transfer characteristic from a speaker *k* to a listener's ear that is angularly displaced from the first axis by an angle that corresponds with the angular displacement of an artificial ear *j* from the second axis, where *j* and *k* each are selectively all integers ranging from unity to N; and

crosstalk cancellation circuit means for converting said first electrical signals M1, M2 . . . MN into second electrical signals *sp*1, *sp*2 . . . *sp*N respectively in accordance with the following equation for application respectively to said loudspeakers through said transmission channels without producing the effect of acoustic crosstalk which might be perceptible by said listener if said first signals were supplied directly to said loudspeakers:

$$\begin{bmatrix} sp1 \\ sp2 \\ \vdots \\ spN \end{bmatrix} = T \cdot A^{-1} \begin{bmatrix} M1 \\ M2 \\ \vdots \\ MN \end{bmatrix}$$

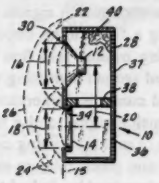
where T is a delay time and A^{-1} is the inverse matrix of a matrix A having at the *j*-th row and the *k*-th column the acoustic transfer characteristic *ajk*.

4,119,799

CRITICAL ALIGNMENT LOUDSPEAKER SYSTEM

Mark F. Merlino, 12211 Ferrari La., Garden Grove, Calif. 92641

Filed Dec. 21, 1977, Ser. No. 862,952
Int. Cl.[2] H04R 1/20
U.S. Cl. 179—1 E 25 Claims



1. Means for converting electrical vibrations into sound including:

a cabinet;

a first driver having a center and a predetermined effective piston diameter mounted to said cabinet;

a second driver having a center and a predetermined effective piston diameter similar to said piston diameter of said first driver, said second driver being mounted to said cabinet vertically from said first driver a distance center to center which is generally π times the similar piston diameter; and

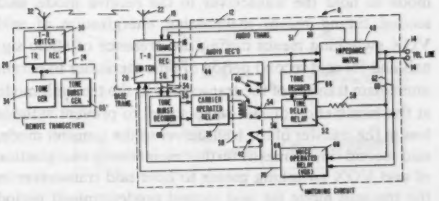
means to connect at least one of said drivers to a source of electrical vibrations.

4,119,800

RADIO-TELEPHONE INTERCONNECTION SYSTEM

Frank D. Girardi, New Kensington, Pa., assignor to Port-A-Phone, Inc., Arnold, Pa.

Filed Feb. 28, 1977, Ser. No. 773,038
Int. Cl.[2] H04B 1/46, 7/00; H04M 11/00
U.S. Cl. 179—2 EA 5 Claims



1. A radio-telephone interconnection system adapted to connect a base radio transceiver having transmitter and receiver portions to a conventional telephone line, comprising:

carrier operated means adapted to be connected to the receiver portion of the base transceiver and responsive to receiver squelch signals, the receiver squelch signals energizing said carrier operated means until a radio signal is received by the transceiver, said received signal breaking

the squelch signals to deenergize said carrier operated means;

an impedance match network adapted to couple the audio output of the receiver portion of the base transceiver to a telephone line and to couple the telephone line to the audio input of the transmitter portion of the base transceiver;

a first switching means responsive to said carrier operated means interposed between the audio output of the receiver portion of the base transceiver and said impedance match network, whereby the audio output is coupled to said impedance match network only in the absence of receiver squelch signals during the receipt of radio signals by the base transceiver;

a second switching means responsive to said carrier operated means;

first time delay means responsive to said carrier operated means and adapted to activate the telephone line in the absence of receiver squelch signals, said first time delay means including a first timing circuit responsive to said second switching means, said first timing circuit being activated by said second switching means each time said carrier operated means is deenergized by the breaking of the receiver squelch signal, and a timed relay energized upon activation of said first timing circuit, said first timing circuit holding said timed relay in its energized condition for a first predetermined period of time;

a third switching means responsive to said timed relay for activating said telephone line, holding said telephone line for said first predetermined period of time after the return of the receiver squelch signal, and for deactivating said telephone line at the expiration of said first predetermined period of time when said first timing circuit times out;

voice operated means responsive to audio frequency signals on said telephone line, said voice operated means including a second timing circuit adapted to be connected to the telephone line and to be activated by audio signals thereon and VOX switching means energized upon the occurrence of said audio signals and being held in the energized condition by said second timing circuit for a second predetermined period of time after the end of said audio signal;

fourth switching means adapted to connect said VOX switching means to the base transceiver for switching the transceiver from a receive mode to a transmit mode upon energization of said VOX switching means, said fourth switching means being responsive to said carrier operated means to disconnect said VOX switching means from said base transceiver upon receipt of a radio signal from a remote station while the base transceiver is in a receive mode to hold the transceiver in the receive mode, said second timing means maintaining energization of said VOX switching means during the presence of audio signals and for said second period of time thereafter to permit immediate transfer of the transceiver to the transmit mode at the termination of said radio signal to prevent syllable loss in the transfer of the transceiver to the transmit mode, said second timing means further maintaining energization of said VOX switching means to hold said transceiver in the transmit mode for said second predetermined period of time during pauses in said audio signal to prevent transfer of the transceiver back to the receive mode during pauses of less than said second period of time, but to permit said VOX switching to time out and permit the transceiver to shift to its receive mode during pauses exceeding said second period of time, whereby two-way communication can be effected through said interconnection system.

4,119,801

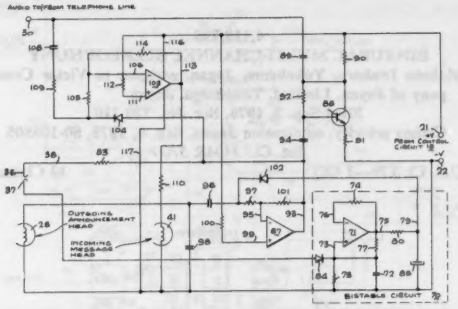
MODE SWITCHING AND VOLTAGE REGULATOR CIRCUITRY FOR A TELEPHONE ANSWERING DEVICE

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Filed Dec. 17, 1975, Ser. No. 641,551

Int. Cl.[2] H04M *1/65*

U.S. Cl. 179—6 R **12 Claims**



8. A telephone answering device having a ring responsive control circuit means for switching on power upon detection of a ring signal on a telephone line, wherein a recorded outgoing announcement is transmitted to said telephone line during an initial portion of the answering cycle, and wherein an incoming message is recorded during a subsequent portion of the answering cycle, the improvement comprising:

a bistable circuit connected to assume one stable state when said power is switched on and to assume a second stable state at the completion of outgoing announcement transmission,

a first operational amplifier connected to amplify said announcement during transmission thereof, said amplifier being biased to provide a dc output about which the announcement audio is superimposed,

first means connecting said bistable circuit to an input terminal of said first operational amplifier so as to force the output thereof to a constant value inhibiting audio transmission therethrough when said bistable circuit is in said second stable state.

4,119,802

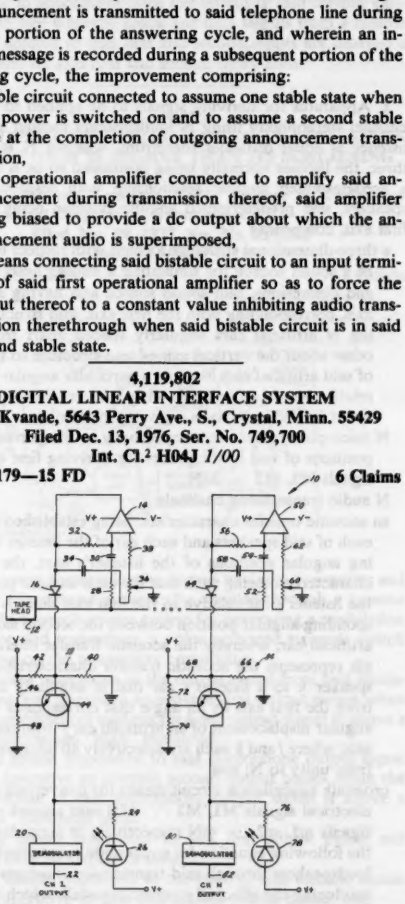
DIGITAL LINEAR INTERFACE SYSTEM

Roger J. Kvande, 5643 Perry Ave., S., Crystal, Minn. 55429

Filed Dec. 13, 1976, Ser. No. 749,700

Int. Cl.[2] H04J *1/00*

U.S. Cl. 179—15 FD **6 Claims**



1. Digital linear interface system to interface from the output of a tape head having N mixed sine waves storing digital infor-

mation on each sine wave for each respective channel to N channels of data output comprising an output from said tape head; a bandpass filter means, rectifier means, peak detector means, and demodulator means whereby each means is in series for each of said corresponding N channels of data output and each series connection connects between said output from said tape head and said N channels of digital input.

4,119,803

CONTROL UNIT FOR A TIME-DIVISION TELECOMMUNICATIONS EXCHANGE

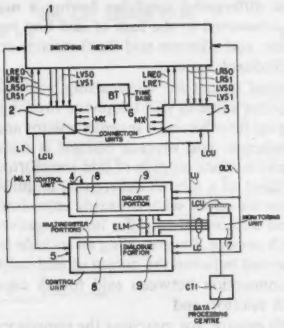
Jean-Baptiste Jacob, Perros-Guirec, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jul. 15, 1977, Ser. No. 816,102

Claims priority, application France, Jul. 22, 1976, 76 22419

Int. Cl.[2] H04Q *3/54, 11/04*

U.S. Cl. 179—15 AT **17 Claims**



1. A time division telecommunications exchange comprising a switching network, connection units, a time base, and a monitoring unit connected to a data processing centre, characterised by the fact that it further comprises at least one control unit constituted by a multi-register portion and a dialogue portion connected by a dialogue bus to the said multi-register portion which sets up and clears down traffic, the said dialogue portion providing connections between the multi-register portion and the switching network and the connection units, the said control unit being connected to the switching network by network lines and by function lines; to the connection units by test lines and by marking lines and to the monitoring unit by monitoring lines, the said control unit replacing the specialised units normally employed in a time division exchange.

4,119,804

OPEN LOOP SYSTEM FOR TRANSMITTING DIGITAL INFORMATION

Emanuel Hafner, Hintenkappelen, and Bertil Forss, Grosshochstetten, both of Switzerland, assignors to Hasler AG, Bern, Switzerland

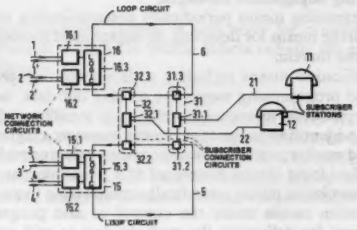
Filed Mar. 24, 1977, Ser. No. 780,851

Claims priority, application Switzerland, Mar. 30, 1976, 3929/76

Int. Cl.[2] H04J *6/00*

U.S. Cl. 179—15 AL **6 Claims**

1. Equipment for the transfer of digital information between several lines which form part of an exchange network, and a plurality of subscriber stations which are connected via subscriber connection circuits in series to a loop on which bit groups circulate in exclusively one direction, and wherein the subscriber connection circuits check all bit groups filtering out those bit groups intended for them, replacing each filtered-out bit group by another bit group and sending out these replaced bit groups in place of the ones filtered out, wherein: the lines belonging to the exchange network are PCM multiplex lines (1,1′ till 4, 4′); the start and the end of each loop (5, 6) and at least one PCM multiplex line (1,1′ till 4, 4′) of the exchange network are connected to respectively one network connec-



tion circuit (15, 16); the bit groups circulating on the loops (5, 6) are telegrams comprising an address part, a signalling part and an information part; the network connection circuits (15, 16) are adapted to convert the content of each PCM time slot arriving successively on a PCM line into the information part of a telegram; they further insert the relevant time slot numbers as the address part of the telegrams and send these out onto the relevant loop (5, 6); and they conversely convert the information part of the telegrams arriving from the loop (5, 6) into the content of the PCM time slots associated with the telegram addresses.

4,119,805

LINE-CONTROL UNIT FOR TELECOMMUNICATION SYSTEM

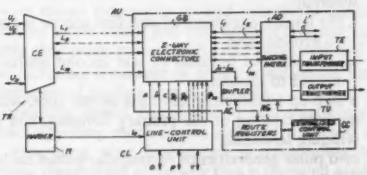
Cesare Pratelli, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 775,399, Mar. 7, 1977, abandoned. This application Jun. 20, 1977, Ser. No. 808,438

Claims priority, application Italy, Mar. 8, 1976, 20944 A/76

Int. Cl.[2] H04M *15/06*

U.S. Cl. 179—18 FC **12 Claims**



1. In a telecommunication system including a terminal serving a multiplicity of subscriber lines and an automatic exchange at a nodal point joined to said terminal by a number of line links less than the number of said subscriber lines, said terminal being provided with a line concentrator/distributor controlled by a marker for temporarily assigning available line links to calling and called subscriber lines, said automatic exchange being provided with switch means for establishing connections

between said line links and other parts of the system, said subscriber lines falling into different service classes restricting for at least certain of said subscriber lines the types of connections to be established,

the combination therewith of a line-control unit at said nodal point communicating with said marker by way of signaling channel independent of said line links for exchanging engagement messages with said marker identifying a subscriber line involved in the establishment of a connection and a line link temporarily assigned thereto, said line-control unit comprising:

storage means connected to said signaling channel for registering engagement messages;

programming means periodically communicating with said storage means for detecting an engagement message registered therein;

classification means including a data store engageable by said programming means for reading out data, including service-class information, relating to a calling subscriber line identified in an engagement message, originating at said marker, said classification means being provided with a data-input circuit connected to a teleprinter; and

retransmission means periodically connectable to said classification means under the control of said programming means for delivering the read-out data to said automatic exchange.

4,119,806

SUBSCRIBER'S LINE EQUIPMENT FOR A TELEPHONE EXCHANGE

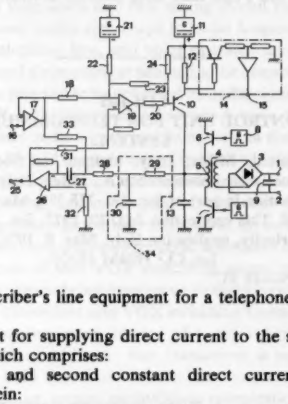
André N. Baratin, Neuilly-sur-Seine, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Dec. 6, 1977, Ser. No. 857,901

Claims priority, application France, Dec. 17, 1976, 76 38031

Int. Cl.[2] H04M *19/00*; H04B *1/58*

U.S. Cl. 179—18 FA **1 Claim**



1. A subscriber's line equipment for a telephone exchange, comprising:

a. a circuit for supplying direct current to the subscriber's line, which comprises:

1. first and second constant direct current sources, wherein:

I. the negative terminal of said first source is connected to ground; and

II. the positive terminal of said second source is connected to ground;

2. a step-up transformer having a ferrite core, with intermediate tapping of the primary winding, and primary winding terminals;

3. two pulse generators of rectangular pulses each having a duty factor of 0.5 and a repetition radio frequency;

4. a first PNP transistor connected as a current generator, in series with said first current source, wherein:

I. the collector of said transistor is connected to the intermediate tapping of said transformer;

II. the emitter of said transistor is connected, by a first resistor, to the positive terminal of said first source;

III. the base of said transistor is connected, by a second resistor, to the positive terminal of said first source, and

5. a third resistor, connected between the base of said first transistor and, by a fourth resistor, to the negative terminal of said second source;

6. two NPN transistors having a common emitter connection, wherein;

I. the collectors of said transistors are respectively connected to said primary winding terminals of said transformer;

II. the bases of said transistors are respectively connected to the output of the pulse generators; and

III. the emitters of said transistors are connected to ground; and

7. rectifying means connected to the transformer secondary winding for supplying direct current to the subscriber's line;

8. a first filtering capacitor shunting the subscriber's line; and

9. a second high-frequency decoupling capacitor, connected between ground and said intermediate tap of said transformer primary winding; and

b. a first circuit for transmitting voice signals from the telephone exchange to the subscriber's line, having an impedance-matching, unit-gain buffer amplifier at its input connected by a fifth resistor to a current generator comprising a first differential amplifier having a negative-feedback loop connected to the base of said first resistor by a sixth resistor, and wherein said third resistor comprises a positive-feedback resistor;

c. a second circuit for transmitting voice signals from the subscriber's line to said telephone exchange, comprising a low-pass filter having a seventh resistor and a third capacitor, wherein said seventh resistor is connected between the intermediate tapping of said transformer and the negative input of a second differential amplifier by an eighth resistor in series with a fourth capacitor, whereby said second differential amplifer has a negative feedback loop;

d. a ninth resistor, for providing an antiside tone effect, being connected between the output of said buffer amplifier and the connection between said fourth capacitor and said eighth resistor; and

e. a tenth resistor, for matching the impedance relative to the telephone line, being connected between the output of said second differential amplifier and the negative input of said first differential amplifier.

4,119,807

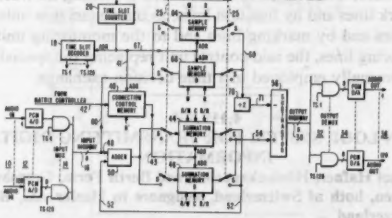
DIGITAL TIME DIVISION MULTIPLEX SWITCHING SYSTEM

Lawrence Paul Nahay, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 13, 1977, Ser. No. 806,284

Int. Cl.[2] H04M *3/56*

U.S. Cl. 179—18 BC **5 Claims**



1. A TDM telephone exchange to which *n* telephone lines are sequentially connected during *n* respective sequential time slots, comprising

timing means providing alternating write-in and read-out cycles of *n* sequential memory addresses synchronized with said *n* respective sequential time slots,

a summation memory in which a storage location accumulates the sum of message samples from one or more lines during a write-in cycle and supplies the sum of the message samples to one or more of said lines during a subsequent read-out cycle, and

a connection control memory for indirectly addressing said summation memory, said connection control memory having *n* sequential memory storage locations, addressed by said sequential memory addresses from said timing means, all memory storage locations corresponding with lines to be connected together in conference containing the address of one storage location in said summation memory,

whereby the contents of said connection control memory determines the conference connections of said telephone lines.

4,119,808

MULTI-FREQUENCY RECEIVER CIRCUITS

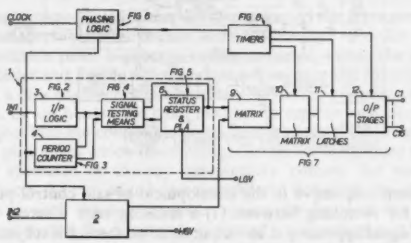
Michael Frank Atkin, Fife, Scotland, assignor to General Instrument Corporation, Clifton, N.J.

Filed Jun. 15, 1977, Ser. No. 806,585

Claims priority, application United Kingdom, Jun. 17, 1976, 25227/76

Int. Cl.² H04M *1/50*

U.S. Cl. 179—84 VF **10 Claims**



1. A signal processor comprising: an input for receiving a periodic signal; measuring means coupled to the input for making successive measurements of the periodic signal to determine with each measurement whether the period of the signal has a value lying within any one of a plurality of predetermined spaced ranges of values; means coupled to the measuring means for producing an output signal if the determined value falls within a single one of the ranges more than a first predetermined number of times in a group of a given number of successive measurements and for continuing to produce said output signal if in the following such group the value falls within the same signal one of the ranges more than a second predetermined number of times less than the first predetermined number; and means for storing an identification of said single one of the ranges during the production of said output signal to provide an identification of the period of the periodic signal.

4,119,809

BRAILLE LENS FOR TELEPHONE DIALS

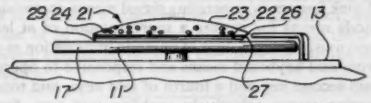
Pearl N. Bianchini, 890 Roble Ave., Menlo Park, Calif. 94025

Filed Nov. 17, 1976, Ser. No. 742,541

Int. Cl.² H04M *1/21*

U.S. Cl. 179—90 A **5 Claims**

1. A member to be positioned in the middle of a standard telephone dial to assist the blind in locating the finger holes of said dial comprising a transparent body having a convex upper surface having a maximum size to fit on said dial with the periphery of said convex upper surface of said body adjacent but spaced inward of the finger holes of said dial, raised Braille indicia on the upper surface of said body near the periphery thereof radially aligned with the numeral designations of said finger holes, attachment means to attach said body to the center of the dial so that said finger holes are substantially unobstructed, said attachment means engaging only said standard telephone dial, said body being removable from said dial,



and means integrally formed in said body for orienting said body by touch to align the Braille indicia radially the numeral designations.

4,119,810

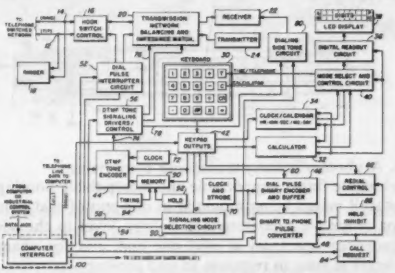
PUSHBUTTON TELEPHONE APPARATUS WITH AUTOMATIC DIALING AND COMBINATIONAL SEQUENTIAL CONTROL SIGNALLING CAPABILITIES

Allan Marin, Evanston, and Jack L. Bradbery, Evergreen Park, both of Ill., assignors to Phone Devices Corporation, Chicago, Ill.

Filed Sep. 13, 1976, Ser. No. 722,394

Int. Cl.² H04M *1/42*

U.S. Cl. 179—90 K **7 Claims**



1. An electronic telephone apparatus comprising:

keyboard means for entering of numeric information and function control commands including a plurality of individually operable keys, said plurality of keys comprising a standard multifrequency tone signalling array and a predetermined number of function control keys;

signalling mode means responsive to operation of a first of said keys for selectively controlling the operation of said telephone apparatus in a dial pulse signalling mode and in a tone signalling mode, said selectively controlling signalling mode means being effective to place said apparatus in said dial pulse signalling mode when the apparatus is conditioned to an off-hook state;

dial pulse means responsive to said selectively controlling signalling mode means and said keyboard means for generating dial pulse train signals, said generated dial pulse train including a number of pulses equal to the numeric designation of the key that is operated;

tone signalling means responsive to said selectively controlled signalling mode means and said keyboard means for generating tone frequencies corresponding to the numeric designation of the key that is operated according to a preassigned code; and

means enabled by said dial pulse train generating means for providing a dialing side-tone signal to the receiver element of said telephone apparatus when said dial pulse generating means is generating dial pulse train signals to inform the subscriber that outpulsing is occurring;

said dial pulse generating means comprising dial pulse mode means for storing a representation of at least one previously entered digit of numeric information as entered from said keyboard means and responsive to operation of a

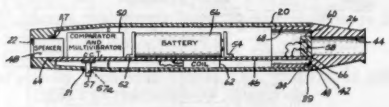
second and a third of said keys, said dial pulse mode storing means selectively enabling said dial pulse generating means to sequentially generate said dial pulse train signals corresponding to said stored representation when said third key is operated and when said selectively controlling signalling mode means is in said dial pulse signalling mode;

said tone frequency generating signal means comprising tone mode means for storing a representation of at least one previously entered digit of numeric information as entered from said keyboard means and responsive to operation of said second key and a fourth of said keys, said tone mode storing means selectively enabling said tone frequency generating means to sequentially generate said tone frequencies corresponding to said stored representation when said fourth key is operated, said selectively controlling signalling mode means, upon operation of said second and fourth keys, being effective to place said apparatus in said tone signalling mode.

4,119,811
PHOTO-VIBRATORY TRANSDUCER

Larry S. Moricca, Churubusco, and Joseph G. Utasi, Fort Wayne, both of Ind., assignors to Anthony C. Moricca, Fort Wayne, Ind.

Filed Apr. 4, 1977, Ser. No. 784,286
Int. Cl.[2] G09B *21/00*; G06K *7/14*
U.S. Cl. 340—407 **4 Claims**



1. A photo-vibratory transducer comprising:

an elongate finger supportable and manipulable housing;

photocell means being mounted in one end of said housing for sensing a predetermined energy level in the visible frequency spectrum at said one end, and for changing electrical state in response to said sensing;

sensory means being mounted in said housing for generating a discernible vibration upon actuation;

a portable power source mounted in said housing and coupled to said photocell means to provide a first signal corresponding to said change of state;

circuit means coupling said photocell means, said sensory means, and power source for energizing said sensory means upon said photocell means sensing said predetermined energy level;

comparator circuit means mounted in said housing and being coupled to said power source and said photocell means for receiving said first signal and for comparing said first signal with a predetermined second signal and providing an output signal upon a predetermined ratio between said first and second signals;

multivibrator circuit means mounted in said housing and being coupled to said output signal and said sensory means for generating a third signal of predetermined frequency in response to said output signal for actuating said sensory means.

4,119,812
SIGNAL DEFECT DETECTION AND COMPENSATION WITH SIGNAL DE-EMPHASIS

Edward Coley Fox, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1977, Ser. No. 789,294
Int. Cl.[2] H04B *15/00*
U.S. Cl. 179—100.4 D **10 Claims**

1. An apparatus for use with a source of signals including a carrier signal which is frequency modulated in accordance with a pre-emphasized modulation signal information, said modulated carrier signal being undesirably subject to accompaniment by impulse noise; comprising:

a signal bandpass filter connected to said source of signals for passing said modulated carrier signal;

means responsive to the signal output of said bandpass filter for identifying departures of the amplitude of said signal output from a given amplitude range;

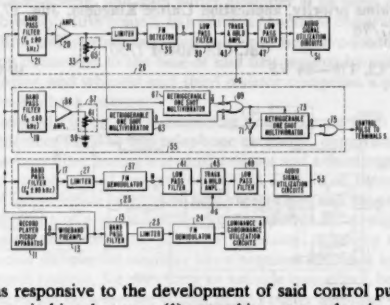
means for developing a first defect indication pulse in response to the output of said departure identifying means;

means responsive to the output of said source of signals for identifying impulse noise;

means for developing a second defect indication pulse in response to the output of said impulse noise identifying means;

means for developing a control pulse in response to the development of either of said first or second defect indication pulses;

frequency modulation detection means responsive to the signal output of said bandpass filter for developing a signal output which corresponds to the modulation signal information;



means responsive to the development of said control pulse for switching between (1) a tracking state wherein the signal appearing at an output terminal thereof is subject to variations responsively to the variations in the signal developed at the output of said first low pass filter and (2) a holding state wherein the signal appearing at the output terminal thereof at the moment of switching is maintained constant for the duration of the holding state;

means responsive to the development of said control pulse for controlling the switching state of said switching means; and

first means, coupled between the output of said modulation detection means and an input of said switching means, and second means coupled to the output of said switching means for providing in combination a de-emphasis of the output of said modulation detection means in a manner suitably complementary to the pre-emphasis of the modulation signal information; the passband of said first means being narrower than the bandwidth of the signal developed by said frequency modulation detection means.

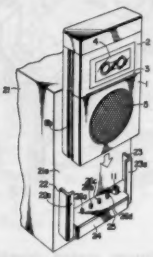
4,119,813
CASSETTE TAPE RECORDER WITH DETACHABLE COUPLING TO RADIO

Masanobu Sato, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Division of Ser. No. 639,271, Dec. 10, 1975, Pat. No. 4,041,250.
This application May 9, 1977, Ser. No. 794,829
Claims priority, application Japan, Dec. 23, 1974, 50-155007; Dec. 27, 1974, 49-157061; Dec. 28, 1974, 50-002698
Int. Cl.[2] G11B *31/00*; H04B *1/20*
U.S. Cl. 179—100.11 **5 Claims**

1. A coupling device for cassette tape recorder comprising a pair of coupling channels formed in both lateral sidewalls of a cassette tape recorder, a pair of rails formed on a coupling surface of radio set and adapted to engage the coupling channels for detachably mounting the tape recorder on the coupling

surface of the radio set, a plurality of apertures formed in a bottom surface of the tape recorder, a plurality of socket contacts disposed within the respective apertures and connected with an electrical circuit of the tape recorder, a plurality of pin contacts mounted on an insulating member secured to the coupling surface of the radio set so as to extend between the pair of rails and adapted to be brought into electrical contact with the socket contacts to provide an electrical connection between an electrical circuit of the radio set and that of the tape recorder when the latter is coupled with the radio set, a coverplate having a plurality of openings extending therethrough and disposed for a sliding movement along the bottom surface of the tape recorder, the openings in the coverplate



being disposed in a manner corresponding to the arrangement of the apertures in the bottom surface of the tape recorder, and a rockable pawl member pivotally mounted within the tape recorder and having a free end which engages the coverplate and a cam edge which projects into one of the coupling channels, means biasing the pawl member to urge its cam edge to project into the coupling channel and to move the coverplate to a position in which the openings therein are misaligned with the apertures to thereby substantially conceal the socket contacts, the cam edge being engaged and driven by one of the rails to rock the pawl member against the force of the bias means so that the coverplate is moved to a position in which the openings therein are aligned with the apertures when the tape recorder is physically coupled with the radio set.

4,119,814
HEARING AID WITH ADJUSTABLE FREQUENCY RESPONSE

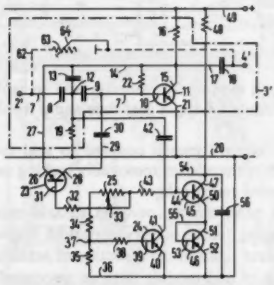
Friedrich Harless, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 2, 1977, Ser. No. 856,971

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658301

Int. Cl.[2] H04R *25/00*

U.S. Cl. 179—107 FD **8 Claims**



1. A hearing aid comprising a transistor amplifier stage including a transistor having a base, an emitter, and a collector, and a frequency-determining network, characterized in that the network is connected with the base of the transistor, and comprises first and a second capacitors in succession, a third capacitor having one terminal connected between the first and second capacitors and a second terminal connected to the collector of the transistor, first resistance means for connecting the collector to one pole of the operating-current-battery, the collector being connected to an output-point of the stage, second resistance means having one terminal connected between the first and the second capacitors, and having a second terminal connected to the emitter of the transistor, and for connection to an opposite pole of the battery, and third resistance means, connected between the collector and the base of the transistor.

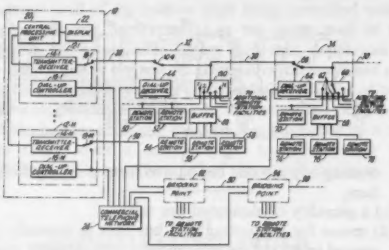
4,119,815
CENTRAL STATION SYSTEM INCLUDING SECONDARY COMMUNICATION PATH ESTABLISHED THROUGH COMMERCIAL TELEPHONE NETWORK

Eric J. Frankfort, Brooklyn, N.Y., and David Stuart Terrett, Lincroft, N.J., assignors to American District Telegraph Company, Jersey City, N.J.

Filed May 31, 1977, Ser. No. 801,822

Int. Cl.[2] G08B *29/00, 26/00;* H04M *11/00*

U.S. Cl. 179—175.3 S **18 Claims**



1. In a central station system including a central station, at least one remotely located bridging point having a plurality of output ports and serving a plurality of remote stations, each of which is connected to a respective one of the output ports, and normal telecommunication means for transmitting signals between the central station and the bridging point, apparatus for connecting the central station to selected remote stations comprising:

means associated with the central station for generating address signals applied to the normal telecommunication means;

means associated with the bridging point for connecting the normal telecommunication means to the output port identified by the address signals and for isolating all other output ports form the normal telecommunication means; and

means for establishing an alternative telecommunication path between the central station and the bridging point through the commercial telephone network to which the address signals are applied and the identified output port is connected in the event of failure of the normal telecommunication means.

4,119,816
CROSS CONNECT PANEL HAVING SLIDE SWITCHES AND BUS BAR CONSTRUCTION

Robert E. Davis, Salt Lake City, Utah, assignor to Stage-Brite Inc., Minneapolis, Minn.

Filed Dec. 2, 1976, Ser. No. 746,719

Int. Cl.[2] H01H *9/00*

U.S. Cl. 200—1 R **5 Claims**

1. A cross connect panel, comprising:

(a) a plurality of elongated bus bars;

(b) means for supporting said bus bars in mutually insulated, spaced, parallel relationship;

(c) said supporting means comprising first insulating mem-

bers having a groove on one side to receive a bus bar and a flat portion on the other side for abutting an adjacent bus bar, second insulating members positioned between adjacent first insulating members and beneath said bus bars in supporting relationship thereto, said first and second insulating members having complementary tongue and groove portions for interlocking together, and clamping means acting orthogonally to said insulating members to compress said bus bars in the grooves of said first members;

(d) a plurality of bus rails;

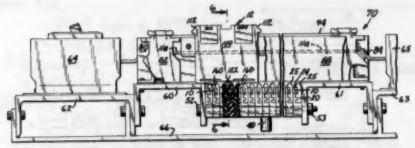
(e) means for supporting said bus rails in mutually spaced relationship substantially perpendicular to said bus bars and spaced therefrom; and

(f) slider assemblies slideably positioned on said bus rails for movement therealong for selective alignment and contact with individual bus bars.

4. A cross connect panel, comprising:

(a) a plurality of elongated bus bars;

(b) means for supporting said bus bars in mutually insulated spaced parallel relationship with adjacent bus bars separated by insulating members having rounded edges ex-



tending beyond said bus bars to form arc quenching chambers;

(c) a plurality of elongated bus rails;

(d) means for supporting said bus rails in mutually parallel spaced relationships substantially orthogonally to said bus bars and spaced thereabove;

(e) slider assemblies slideably positioned on said bus rails for movement therealong for selective alignment and contact with individual bus bars; and

(f) said slider assemblies including a pair of contact blocks slideably positioned one above the other in each slider assembly for vertical movement therein, a spring positioned between said contact blocks for urging said contact blocks apart with the upper block electrically contacting the underside of a bus rail and the lower block being urged downwardly toward said bus bars, flexible conductor means electrically interconnecting said contact blocks, and operator actuatable retraction and release mechanisms operatively connected to said lower contact block for switchably controlling the connection and disconnection of conductive paths between said bus bars and said bus rails.

4,119,817

BREAKER POINT ASSEMBLY

William J. Orr, 5909 Berkeley Dr., Berkeley, Mo. 63134

Filed Sep. 7, 1976, Ser. No. 720,758

Int. Cl.[2] H01H *19/00*

U.S. Cl. 200—19 A **6 Claims**

1. A breaker point assembly for use with conventional internal combustion engines, comprising,

base means,

breaker arm means pivotally mounted on a post operably mounted on said base means,

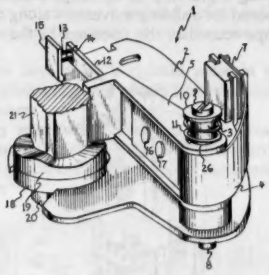
a fixed ignition point operably mounted on said base means,

a second ignition point mounted on said breaker arm means and disposed such that as said breaker arm pivots in opposite directions the second point moves into contact with the first ignition point and then away from said first ignition point,

first cam means operably mounted on a shaft and disposed proximate said base means, said first cam means disposed such that the longitudinal axis of the first cam shaft and its cam surfaces are essentially parallel to the longitudinal axis of said breaker arm post,

second cam means operably mounted on said first cam shaft and disposed such that its cam surfaces are essentially transverse to the longitudinal axis of said cam shaft,

first cam follower means operably mounted on said breaker arm means and disposed in contact with the cam surface of said first cam means,



second cam follower means operably mounted on said breaker arm means and disposed in contact with the cam surface of said second cam means,

first spring means operably mounted on said breaker arm means and said base means are disposed such that it causes said breaker arm means to pivot towards said first cam means,

second spring means operably mounted on said breaker arm post and disposed between said breaker arm means and the end of said post distal from said base means.

4,119,818

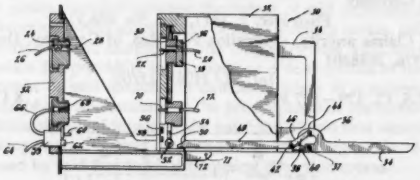
INTERCONNECTING MODULE

Rocco James Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Jan. 2, 1976, Ser. No. 646,701

Int. Cl.[2] H01H *9/20, 33/46*

U.S. Cl. 200—50 AA **5 Claims**



1. A circuit module for insertion into an associated receptacle, said module having a rear face and a front face and comprising:

movable closure means coupled to said module near the front face thereof for removably locking said module in an associated receptacle;

movable pawl means, coupled to said module, having a decreasing radius of curvature with respect to its associated pivot point in the direction of actuation for effecting locking of said module with an associated receptacle,

said movable closure means having a bearing surface near the pivot point thereof for actuating said movable pawl means to effect locking of said module with an associated receptacle;

first movable actuator means associated with said module, extending toward said rear face and movable in response

to motion of said closure means, for actuating an electrical switch means associated with an associated receptacle;

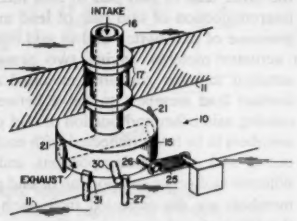
second movable actuator means associated with said module, movable in response to motion of said closure means for actuating an electrical contact device positioned in said rear face independently of said switch means.

4,119,819

FLUID ACTIVATED VELOCITY SWITCH

Charles H. McGuire, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jan. 31, 1977, Ser. No. 763,951
Int. Cl.[2] H01H *35/24*
U.S. Cl. 200—81.9 R **3 Claims**



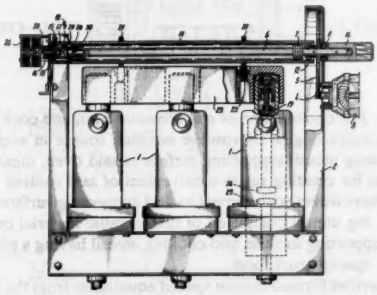
1. Apparatus for providing switching action including a member mounted for limited rotation about an axis in communication with means including a conduit with a longitudinal dimension extending along the axis for receiving a stream of fluid flowing in the longitudinal direction, means affixed to said member in fluid receiving communication with said conduit for receiving the fluid from said conduit and directing the fluid radially outwardly from the rotational axis and in a generally tangential direction to said member to cause rotation of said member in a first direction, biasing means connected to said member for biasing the rotation of said member in an opposite direction to the first direction and toward a quiescent position, and actuating means connected to said member for actuating remote apparatus upon a predetermined amount of rotation of said member.

4,119,820

SPRING-DRIVE MECHANISM FOR ELECTRIC SWITCHES

Johannes H. L. A. Hilderink, Buurse, Netherlands, assignor to Hazemeijer B.V., Buurse, Netherlands

Filed Jun. 30, 1977, Ser. No. 811,830
Int. Cl.[2] H01H *3/30*
U.S. Cl. 200—153 SC **2 Claims**



1. In a spring-drive mechanism for electric switches which includes a drive shaft, a switch-on spring which can be put under tension by the drive shaft and which surrounds this drive shaft as well as a hollow shaft situated coaxially around the drive shaft and supporting at least one cam disc for operating the contacts of the switches, one end of the switch-on spring being fixedly connected to the drive shaft and the other end being fixedly connected to the hollow shaft, means being present to rotate the hollow shaft each time over a certain angle under the influence of the energy stored in the tensioned switch-on spring and operating the switch contacts in consequence thereof.

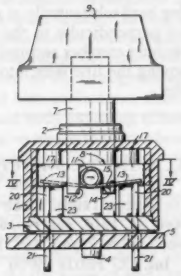
the improvement wherein the hollow shaft surrounds the switch-on spring over its whole length, wherein the means for rotating the hollow shaft over a certain angle includes a non-rotatable hollow cylinder extending coaxially within one end of the hollow shaft, said hollow cylinder including two axially staggered wall bores in the circumference of the cylinder, each bore of which contains a ball, said balls being alternately radially movable by means of a coupling shaft which is axially movable within the chamber of said hollow cylinder, said coupling shaft including surfaces with oppositely changing diameters such that when the coupling shaft is electro-magnetically or manually moved in axial direction one of said balls is partly pressed to extend outwardly of the outer surface of said cylinder by one of said surfaces with changing diameter, the inner wall of the hollow shaft being provided with a ridge extending nearly as far as the outer wall of the cylinder, the arrangement being such that, dependent on the switch on or switch off position of the switches and thus on the axial position of the coupling shaft, one of both balls which is pressed outwards, will arrest the ridge such that the hollow shaft and the cam disc supported by it can only rotate over a certain angle (α,β) necessary for switching-on or switching-off of the switch contacts.

4,119,821

NORMALLY CLOSED SWITCH

Arthur Wayne Overton, Raleigh, N.C., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Sep. 26, 1977, Ser. No. 836,312
Int. Cl.[2] H01H *13/52*
U.S. Cl. 200—159 R **1 Claim**



1. A normally closed switch comprising a case having a top with an opening therethrough, a plunger having a foot in the case and a stem extending upwardly through said opening and above the case, a bridging contact member in the case at the lower end of the plunger, said contact member being formed from a spring having a central portion engaging said foot and having free end portions extending away from opposite sides of the foot to form movable contacts, a pair of stationary electric contacts mounted in the case beneath said movable contacts and normally engaged thereby, terminals connected with the stationary contacts and extending out of the case, and a fulcrum member in the case between each stationary contact and said central portion of the spring, said fulcrum members being disposed beneath said movable contacts and normally out of contact with them, the tops of the fulcrum members being

lower than the tops of said stationary contacts, and the fulcrum members being of such height that when said central portion of the spring is moved downwardly by depressing the plunger said movable contacts will engage and rock on the fulcrum members and lift away from the stationary contacts to open the switch.

4,119,822

SMALL CURRENT SWITCH

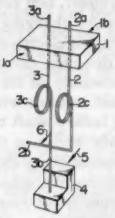
Minoru Kobayashi, Hachioji, and Shigeru Nemoto, Tachikawa, both of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Apr. 19, 1977, Ser. No. 788,886

Claims priority, application Japan, Apr. 27, 1976, 51/54191[U]

Int. Cl.[2] H01H *1/06, 1/26*

U.S. Cl. 200—246 **3 Claims**



1. A small current switch comprising an electrically insulating base; a first resilient conductive wire having one of its ends secured to the base to provide a terminal for connection with an electrical circuit, the first wire being formed with a coiled reinforcement intermediate its ends and having its other end extending in a straight manner; a second resilient conductive wire having one of its ends secured to the base to provide another terminal for connection with an electrical circuit, the second wire being juxtaposed with the first wire and being formed with a coiled reinforcement intermediate its ends, the coiled reinforcement of the second wire being disposed in parallel relationship with that of the first wire, the other end of the second wire being bent substantially at right angles so as to extend in a direction perpendicular to the straight end of the first wire; and a switching member secured to the other end of the first wire for moving the first wire into and out of contact with the second wire.

4,119,823

ELECTRICAL SWITCH

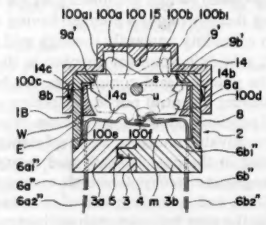
Kenichi Matsueda, and Takao Kitamura, both of Kurayoshi, Japan, assignors to Omron Tateisi Electronics Co., Japan

Filed Apr. 14, 1976, Ser. No. 677,070

Claims priority, application Japan, Apr. 19, 1975, 50/53319

Int. Cl.[2] H01H *19/06*

U.S. Cl. 200—302 **6 Claims**



1. An electrical switch of a dual-in-line package type connectable to a substrate having a plurality of switch units each movably provided to be positioned between an operative position and inoperative positions, said switch units being aligned in parallel relation to each other, said electrical switch comprising:

a base plate member;

a plurality of pairs of contact lead members supported by said base plate member, each of said contact lead members having one end portion thereof extending outwardly from one surface of said base plate member for effecting external connection of said lead member, and another end portion of said contact lead member extending from another surface of said base plate member and having an L-shaped configuration with a free end directed toward the other lead of said pair of lead members for effecting interconnection of said pair of lead members during the presence of said switch unit in said operative position;

an actuator member having two pressing portions, said actuator member rotatably mounted above said pair of contact lead members to move between a first position causing said other end portion of said pair of contact lead members to be interconnected with each other by pressing one of said two pressing portions, and a second position wherein said other end portion of said pair of contact lead members are disconnected from each other by pressing the other of said pressing portions

a housing fitted over said base plate member to enclose said contact lead members within said housing, said housing having an elongated opening formed on a top portion thereof for receiving therethrough said pressing portions; and

a cover member provided over said housing, said cover member having opposite edge portions provided on an inner surface of a top wall thereof, said opposite edge portions being engageable with an edge of said pressing portions, so as to prevent said actuator member from being moved from a predetermined position thereof.

4,119,824

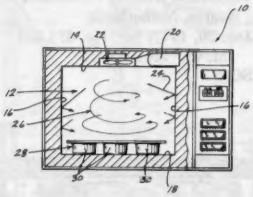
COMBINATION MICROWAVE OVEN AND COOKING UTENSIL

Calhoun G. Jeambey, 7013 Palm Dr., Des Moines, Iowa 50322

Filed Mar. 7, 1977, Ser. No. 774,779

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 E **6 Claims**



1. The combination of a microwave oven and cooking utensil, comprising, a microwave emitting source in said oven, a cooking utensil supporting surface in said oven, means in said oven for creating relative movement of said emitted

microwaves with respect to said supporting surface, a cooking utensil comprised of non-metallic material on said

supporting surface, said cooking utensil having a plurality of spaced-apart food

cavities formed therein spaced equidistant from the center of said cooking utensil, said food cavities being substantially circular in configuration, said cooking utensil having a center portion which prevents access

of food therein.

4,119,825
INDUCTION HEATING APPARATUS

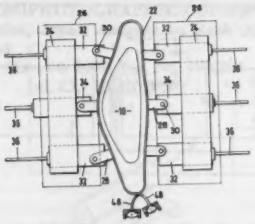
Robert Graham Taylor, Charfield, and William Alfred Proops, Bristol, both of England, assignors to Rolls-Royce (1971) Limited, United Kingdom

Filed Nov. 17, 1975, Ser. No. 632,666

Claims priority, application United Kingdom, Dec. 3, 1974, 52310/74

Int. Cl.² H05B 9/02

U.S. Cl. 219—10.73 **9 Claims**



1. Induction heating apparatus comprising

a workholder adapted for supporting a workpiece;

a flexible induction coil surround said workpiece in said workholder, said coil comprising a thin, flexible strip of an electrically conductive material and a flexible sleeve surrounding said strip and defining adjacent at least one surface of the strip a passage for the flow therethrough of a cooling medium;

means for connecting the coil to a source of electrical energy;

means for causing relative movement of the coil and workpiece along the length of the workpiece;

cam means spaced from said workpiece, and

cam follower means connected to said coil and engaging said cam means,

said coil being of constant length adapted to contortion under the biasing of said cam means acting through said follower to encompass a variety of areas of different and irregular magnitude as said coil moves relative to the length of said workpiece whereby the coil may be maintained in a configuration corresponding substantially to that of the cross-section of the workpiece as the coil traverses the workpiece.

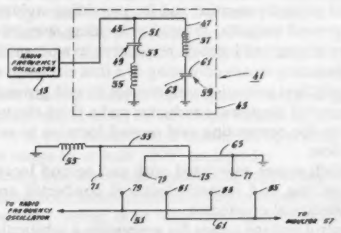
4,119,826
DIELECTRIC HEAT GENERATOR

Phillip Wayne Chambley, and Alan Hedley Norris, both of Rome, Ga., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 4, 1977, Ser. No. 784,577

Int. Cl.² H05B 9/04

U.S. Cl. 219—10.81 **2 Claims**



1. An electrode system for a dielectric heat generator including a radio frequency oscillator comprising:

a first electrical circuit connected between the oscillator output and ground, comprising the series combination of a first capacitive electrode array and a first inductor, one terminal of said first capacitive array being connected to the oscillator output and one terminal of said first inductor being connected to ground;

a second electrical circuit connected between the oscillator output and ground, comprising the series combination of a second capacitive electrode array and a second inductor, one terminal of said second capacitive array being connected to ground and one terminal of said second inductor being connected to the oscillator output;

said first capacitive electrode array comprising first and second sets of finger electrodes located on opposite sides of a material to be dielectrically heated;

said second capacitive electrode array comprising third and fourth sets of finger electrodes located on opposite sides of the material to be dielectrically heated.

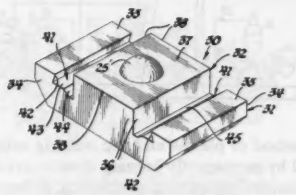
4,119,827
CLINCH WELD FASTENER AND METHOD OF SECURING PANELS TOGETHER

Clayton R. Lenox, Allen Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 24, 1977, Ser. No. 780,795

Int. Cl.² B23K 9/00, 11/04

U.S. Cl. 219—98 **10 Claims**



1. A clinch weld fastener for clinched connection with a thin apertured, deformable first member and for welding to a second member whereby said first member is secured to said second member in abutment thereagainst by said clinch weld fastener, said clinch weld fastener having a body including a head means with a base surface on one side thereof and with a pilot portion extending integrally from said one side, said pilot portion being adapted to fit through an aperture in said first member so that said base surface can abut against one side of said first member, said body including at least two spaced apart undercut clinch groove means therein whereby material of said first member surrounding the aperture can be clinched into said undercut clinch groove means whereby said fastener can be mechanically secured to said first member, said pilot portion having an end surface opposite said head means with integral weld projection means thereon, said pilot portion with said weld projection means thereon being of a predetermined length greater than the thickness of said first member whereby said weld projection means will extend outward from the opposite side of said first member after attachment thereto for engagement with said second member so that said weld projection means will be positioned to be projection welded to said second member whereby said first member can be secured to said second member.

4. A method for securing a panel of non-ferrous deformable material to a ferrous panel by means of a clinch weld fastener comprising a body including a head having extending therefrom a pilot portion with weld projection means at the free end thereof and having undercut clinch groove means in the body thereof, said method including the steps of forming a through pilot opening for the pilot portion of the clinch weld fastener in said on-ferrous panel, inserting the pilot portion of said clinch weld fastener through said pilot opening until said head abuts against one side of said non-ferrous panel, mechanically

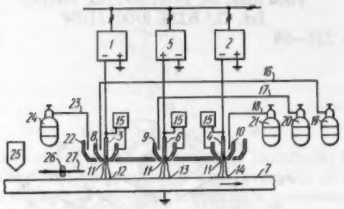
securing by clinching the clinch weld fastener to said non-ferrous panel with the material of said nonferrous panel adjacent said pilot opening positioned in said undercut clinch groove means so that the weld projection means extend outward from one surface of said non-ferrous panel, positioning said non-ferrous panel adjacent to said ferrous panel with the weld projection means in abutment against said ferrous panel and, projection welding the weld projection means of said clinch weld fastener to said ferrous panel.

4,119,828

METHOD OF PLASMA MULTIARC WELDING BY PERMANENTLY BURNING DIRECT-CURRENT ARCS

David Grigorievich Bykhovsky; Arkady Leonidovich Bolotnikov; Gennady Egorovich Strepetov, and Alexandr Ivanovich Danilov, all of Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Tekhnologichesky Institut Elektrosvarochnogo Oborudovania, Leningrad, U.S.S.R.

Filed Feb. 8, 1977, Ser. No. 766,694
Int. Cl.[2] B23K *9/08*
U.S. Cl. 219—121 P **24 Claims**



1. A method of plasma multiarc welding using a common weld pool by permanently burning direct-current arcs of different polarities comprising positioning at least three electrodes adjacent to each other, each of said electrodes being nonconsumable, positioning a workpiece to be welded in spaced relation to said three electrodes, providing a plasma-forming gas and a shielding medium to the space between said three electrodes and said workpiece, providing a direct-current power source across each of said three electrodes and said workpiece simultaneously to create at least three electric arcs, each arc being between one of said three electrodes and the workpiece such that the polarity of each arc is selected to be of straight polarity or of reversed polarity so that the arcs adjacent one another have opposite polarities, wherein the three electrodes positioned adjacent to each other and the direct-current power source provided to said electrodes are set so that the ratio of the product of the currents of two adjacent arcs to the distance between said arcs is greater than or equal to $9.5 \cdot 10^4$ amps squared per centimeter.

4,119,829

DEVICE FOR PRODUCING PULSES FOR THE IGNITION AND STABILIZATION OF AN ELECTRIC-ARC PROCESS

Vassil Dimitrov Bakardjiev, and Emil Assenov Doychinov, both of Sofia, Bulgaria, assignors to Institute po Zavaryavane, Sofia, Bulgaria

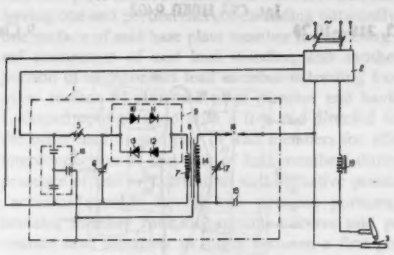
Filed Apr. 19, 1977, Ser. No. 788,793
Claims priority, application Bulgaria, Apr. 20, 1976, 32959
Int. Cl.[2] B23K *9/06*
U.S. Cl. 219—130.4 **3 Claims**

1. A control circuit for a discharge process in which a current source is connected across electrodes for generating an arc discharge, said circuit producing pulses for the ignition and stabilization of the arc, said circuit comprising:

a high frequency transformer having a primary winding and a secondary winding;

a separating condenser and a spark gap connected in series with said secondary winding across said electrodes;

a commutating link of noncontrollable semiconductors connected in series with said primary winding in a series network, said commutating link including a first diode and a first dynister in series and poled in one direction, and a second diode in series with a second dynister poled in the



opposite direction and connected in parallel with the first diode and first dynister;

a pulse condenser connected across said network; and

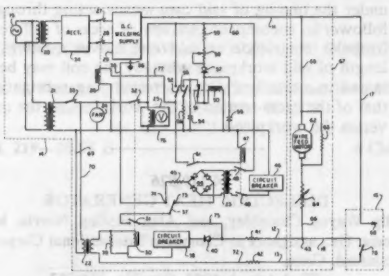
a charging resistor connected in series with said charging condenser across said source, said commutating link being tied to the junction between said charging resistor and said pulse condenser.

4,119,830

REMOTE WELDING CONTROL SYSTEM

Malcolm T. Gilliland, 405 Dividend Dr., Peachtree City, Ga. 30269

Filed Aug. 8, 1977, Ser. No. 822,745
Int. Cl.[2] B23K *9/10*
U.S. Cl. 219—132 **7 Claims**



1. In a welding system having operating means at a first location comprising power supply circuit means for providing a ground potential, for providing a first potential with respect to said ground potential, and for providing welding current to said ground potential through a welding wire, and wire feed means at a second location responsive to a potential difference;

connecting means consisting of a first electrical conductor at said first potential with respect to said ground potential, a second electrical conductor and a third electrical conductor for connecting said second location to said first location;

switch means associated with said second location for connecting said second electrical conductor and said third electrical conductor;

control voltage means for generating a substantially constant control voltage between said second electrical conductor and said third electrical conductor;

wherein said control voltage is independent of and isolated from said ground potential and of a substantially lesser

magnitude than said first potential when said second and third electrical conductors are not connected and producing a second potential with respect to said ground potential when said second and third electrical conductors are connected, and said potential difference is the difference between said first potential and said second potential.

4,119,831

CONTACT PRESSURE ADJUSTING DEVICE IN HEATING PRESSING FIXING APPARATUS FOR ELECTROPHOTOGRAPHIC COPIERS

Takashi Sato, Ebina, Japan, assignor to Rank Xerox, Ltd., London, England

Filed Mar. 14, 1977, Ser. No. 778,824
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—216 **3 Claims**

1. Apparatus for fixing toner images to copy paper or the like, said fuser apparatus comprising:
   a first roll;
   a second roll forming a nip with said first roll through which said copy paper passes;
   means for applying variable pressure between said first and second rolls;
   selection means corresponding to various pressures which can be applied between said rolls; and
   means operably coupling said variable pressure applying means with said selection means whereby different pressures can be applied between said rolls in accordance with said selection means,
   said variable pressure applying means comprising spring means operably coupled to a rotary plate in a manner so as to effect variable forces in accordance with the angular orientation of said plate and drive means coupled to said rotatable plate for positioning said plate in one of the plurality of positions in response to activation of said selection means, said selection means comprising switch means.

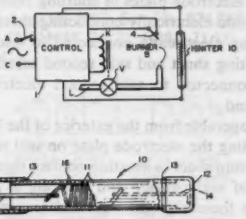
4,119,832

HERMETICALLY SEALED ELECTRICAL GAS FUEL IGNITER

Emery G. Audesse, Williamsport, Pa.; Robert M. Griffin, South Hamilton, and Max E. Oberlin, Lynn, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 17, 1976, Ser. No. 751,609
Int. Cl.[2] F23Q *7/00;* H01C *1/024;* H05B *3/44;* H01K *1/00*
U.S. Cl. 219—270 **4 Claims**

1. An ohmic heating element for an igniter comprising:
   a hermetically sealed, elongate envelope formed by a wall of at least 99% pure alumina and having an operating temperature range to at least 1900° centigrade;
   a mechanically and electrically stable self supporting coiled coil of refractory metal conductor dimensioned to carry a linear power loading of at least one hundred watts per inch disposed within the envelope, the coiling of said coiled conductor pressing peripheral surfaces of said coiled conductor into thermal and mechanical contact with the interior wall along substantially all of the coiled portion of the coiled conductor; and
   conductive means supplying electrical current to the conductor at said power loading effectively to heat the exterior of the envelope wall to a temperature above 900° centrigrade.

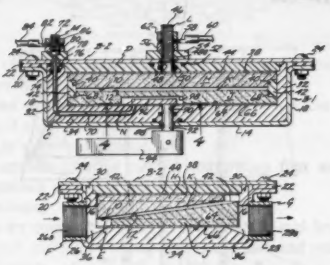


4,119,833

ELECTRIC WATER HEATER

Stephen A. Welch, 7624 Finevale, Downey, Calif. 90240

Continuation of Ser. No. 627,202, Oct. 30, 1975, abandoned. This application Mar. 14, 1977, Ser. No. 776,843
Int. Cl.[2] H05B *3/60;* F22B *1/30;* H01C *10/02*
U.S. Cl. 219—285 **8 Claims**



1. An electrically operated water heater that includes:
   a. a housing having a water inlet and water outlet;
   b. a liner of a non-electrically conducting material disposed within said housing, said liner having first and second openings therein that are axially aligned with said water inlet and water outlet, said liner defining a confined space within the interior thereof that is in communication with said first and second openings and said water inlet and outlet;
   c. first and second electric terminals mounted on said housing and electrically insulated therefrom, said terminals being connected to a source of electric power;
   d. first and second electrically conducting sheets disposed in said confined space in space parallel relationship and in abutting contact with said liner, said first and second sheets disposed between said first and second openings;
   e. first and second electrode plates, each wedge-shaped in cross section and having an obliquely disposed flat surface, arranged in said confined space with the respective obliquely disposed disposed flat surfaces thereof disposed in opposed parallel spaced relation to define a water passage therebetween, said first and second electrode plates being situated in and substantially filling said confined space with each in abutting electrical contact with a respective one of said sheets, and said first and second electrode plates having opposed pairs of aligned elongated recesses formed therein; said second electrode plate being slidable on the sheet in abutting contact therewith relative to said first electrode whereby the spacing between said opposed obliquely disposed flat surfaces may be varied;

f. an elongate electrically insulative guide member engaging each pair of aligned recesses for guiding the movement of said second electrode plate and maintaining said first and second electrode plates in abutting contact with said first and second electrically conducting sheets, said first terminal being electrically connected to said first electrically conducting sheet and said second terminal being electrically connected to said second electrically conducting sheet; and

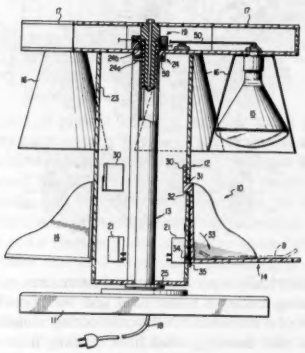
h. means operable from the exterior of the housing for manually sliding the electrode plate on said second electrically conducting sheet in abutting contact therewith to vary the width of said passage and the rate at which water discharges therethrough, with the temperature of the discharging water being dependent on said rate and the resistance said water offers to the flow of electric current between said first and second electrode plates.

4,119,834

ELECTRICAL RADIANT HEAT FOOD WARMER AND ORGANIZER

E. R. Losch, Harrisburg, Pa., assignor to Joseph D. Losch, Longwood, Fla.

Filed Jul. 23, 1976, Ser. No. 708,208
Int. Cl.[2] H05B *1/02*; A47J *36/24*; A47B *11/00*; A47F *5/05*
U.S. Cl. 219—354 **8 Claims**



1. An appliance for warming food comprising:

a base for resting on a surface;

a frame;

means for supporting said frame to rotate about a vertical axis with respect to said base;

a plurality of trays rotatable with said frame and supported at an upper end thereof by said frame for pivotable movement with respect to said frame;

a plurality of heating means mounted on said frame above said trays to warm food placed on said trays, one of said heating being means arranged above each respective tray to project heat downwardly only to the tray with which it is associated, said heating means being arranged to rotate in unison with the frame so that each of the heating means is always in registry with its respective tray;

switch means associated with each of said trays and carried by the frame, said switch means positioned for engagement by the tray for activating said heating means associated with the respective tray in response to pivotal movement of the tray relative to the frame from placement of food on the tray; and

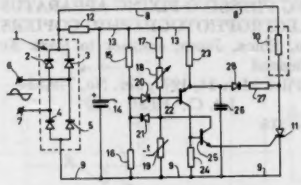
connector means for supplying energy to each of said heating means regardless of the rotary position of said heating means with respect to said base.

4,119,835

ELECTRONIC THERMOSTAT

Jean-Pierre Rene Coulmance, Osny, and Jean-Claude Gerard Six, Sevres, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1976, Ser. No. 749,877
Claims priority, application France, Dec. 18, 1975, 75 38854
Int. Cl.[2] H05B *1/02*
U.S. Cl. 219—501 **13 Claims**



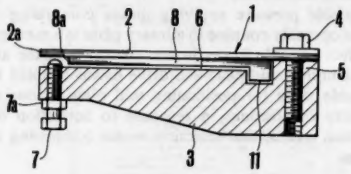
1. A method of controlling the power supplied to an electric load from a source of alternating supply voltage and applied to the load as a pulsating rectified voltage by means of a semiconductor switch comprising, monitoring a physical quantity applying to the control electrode of the semiconductor switch pulses which have been derived from a sawtooth voltage whose repetition frequency depends on a d.c. control voltage that varies as a function of the physical quantity, and superimpositg an alternating voltage with twice the frequency of the supply voltage and with a phase-shift of substantially 90° relative to the supply voltage on the d.c. control voltage.

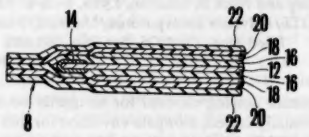
4,119,836

HEAT-CONTROLLED DOCTOR KNIFE

Yutaka Motokawa, Kakogawa, Japan, assignor to Kakogawa Plastics Kabushiki Kaisha, Kokagawa, Japan

Continuation-in-part of Ser. No. 635,320, Nov. 26, 1975, abandoned. This application Jul. 21, 1977, Ser. No. 817,598
Int. Cl.[2] H05B *3/34*
U.S. Cl. 219—528 **3 Claims**





1. A heat-controlled doctor knife comprising:

a thin, flexible blade, fixedly supported along one edge on a support member;

blade flexing means disposed adjacent to and adapted to adjust the angle of the working edge of said blade opposite the fixed edge;

a flat, flexible, heat-generating element securely mounted on and in contact with one side of said blade and extending

adjacent to said blade flexing means, said heat-generating element being capable of uniform heat distribution and in the form of a laminate of a sheet of carbon fiber-containing paper heat element, an electrical conductor connected to said heating element, first layers of a synthetic resin laminated to both surfaces of said heating element, layers of aluminum foil laminated to both outer surfaces of said first synthetic resin layers, and second layers of synthetic resin laminated to both outer surfaces of said aluminum foils; and

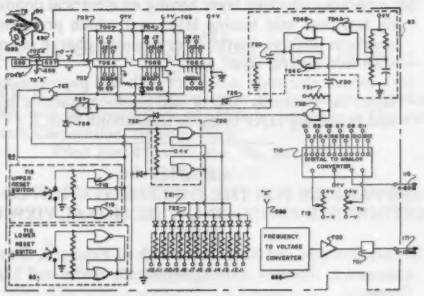
temperature control means, including a heat-sensitive fuse and a thermostat, coupled to said heat-generating element to regulate the temperature of said blade.

4,119,837

BLOCK POSITION AND SPEED TRANSDUCER FOR A COMPUTER-CONTROLLED OIL DRILLING RIG

Loren B. Sheldon, Houston, Tex., and James R. Tomashek, Wood Dale, Ill., assignors to BJ-Hughes Inc., Houston, Tex.

Filed Mar. 15, 1977, Ser. No. 777,927
Int. Cl.[2] G06M *3/14*
U.S. Cl. 235—92 MP **6 Claims**



1. Apparatus for indicating the position and velocity of a traveling block with respect to a vertical guide track within a computer-controlled oil drilling rig comprising:

a friction wheel mounted on the traveling block and biased into contact with the guide track, displacement of the traveling block upwardly or downwardly with respect to the guide track rotating the friction wheel in a first or a second angular direction, respectively, at an angular velocity related to the velocity of the traveling block;

a toothed wheel mechanically coupled to the friction wheel for rotation therewith;

a magnetically responsive element operatively associated with the toothed wheel and adapted to generate an electrical signal representative of the direction of motion of the toothed wheel and to generate a pulse each time a tooth on the toothed wheel passes in proximity thereto;

a converter arrangement responsive to the frequency of the pulses output from the magnetically responsive element for generating a current signal representative of the velocity of the traveling block;

a counter arrangement for counting upwardly or downwardly the pulses output from the magnetically responsive element in accordance with the electrical signal representative of the direction of motion of the traveling block; and,

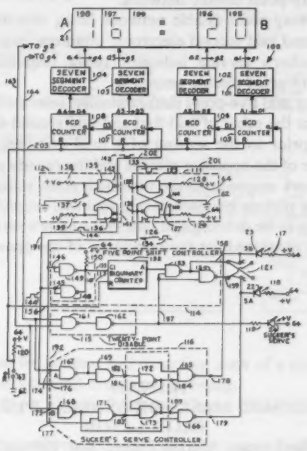
a converter responsive to the count output from the counter arrangement for generating a current signal representative of the position of the traveling block with respect to the guide track.

4,119,838

ELECTRONIC SCORE-KEEPER FOR TABLE TENNIS

Luther L. Genuit, 6231 Calle Del Paisano, Scottsdale, Ariz. 85251

Filed Aug. 15, 1977, Ser. No. 824,560
Int. Cl.[2] H03K *21/22*; G08B *23/00*
U.S. Cl. 235—92 GA **12 Claims**



1. An electronic score-keeper for table-tennis comprising:

first and second scoring switches,

first and second sets of numerical display devices,

first and second serve indicators,

a sucker's serve indicator,

an electronic control circuit comprising first and second electronic counters and a serve controller,

reset means,

means for coupling said serve controller to said first and said second scoring switches and to said first and second serve indicators,

means for coupling said first electronic counter to said first scoring switch and to said first set of numerical display devices,

means for coupling said second electronic counter to said second scoring switch and to said second set of numerical display devices,

said first electronic counter being responsive to actuation of said first scoring switch and said second electronic counter being responsive to actuation of said second scoring switch,

said serve controller responding to the actuation of either of said first and said second scoring switches by appropriately controlling the energization of said first and second serve indicators, and

said reset means being coupled to said first and said second electronic counters and to said serve controller,

whereby when said first or second scoring switch is actuated by the associated player each time a point is gained, the associated said sets of display devices register the running score of each player, said first and said second service indicators being alternately energized as appropriate to identify which of said players has the responsibility for the serve,

at the conclusion of the game, when said reset means is actuated by one of the players said first and said second counters and said serve controller are reset to zero for the start of another game,

wherein said serve controller comprises a five-point shift controller, and

a twenty-point disable network,

said five-point shift controller being coupled to said first and

said second serve indicators and to said first and said second scoring switches,

said twenty-point disable network being coupled to said first and said second electronic counters, to said five-point shift controller, and to said sucker's serve indicator,

said five-point shift controller being responsive to said first and said second scoring switches until disabled by said twenty-point disable network,

said twenty-point disable network being responsive to said first and said second electronic counters, and

said sucker's service indicator being responsive to said twenty-point disable network,

whereby said five-point shift controller selectively energizes one or the other of said first and said second serve indicators prior to the scoring of a total of twenty points by either of the opposing players and the twenty point disable network responds to the twentieth point scored by either of the players by causing said first and second serve indicators to be deenergized and said sucker's serve indicator to be energized for the remainder of the game.

4,119,839

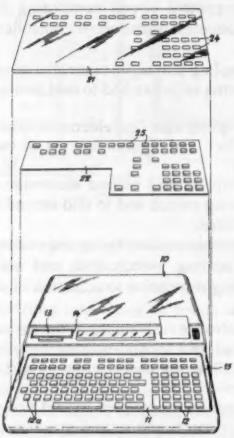
KEYBOARD MASK FOR GENERAL-PURPOSE CALCULATOR

Uwe L. Beckmann, Morris Plains, and Edmund Osterland, Boonton, both of N.J., assignors to W & G Instruments, Inc., Livingston, N.J.

Filed Nov. 30, 1976, Ser. No. 746,112

Int. Cl.[2] G06C *7/02*; B41J *5/08*

U.S. Cl. 235—145 R **9 Claims**



1. A masking device for limiting the operation of a keyboard-equipped general-purpose calculator to a specific task, comprising:

a flexible solid membrane emplaceable above at least a major portion of the keyboard of said calculator;

a plurality of extension keys on said membrane positioned to register with selected calculator keys of said portion upon emplacement of said membrane on said keyboard; and

a rigid panel above said membrane positioned to overlie the entire keyboard, said panel having cutouts penetrated by said extension keys, thereby enabling manual operation of any of said selected calculator keys by depression of the corresponding extension key.

4,119,840

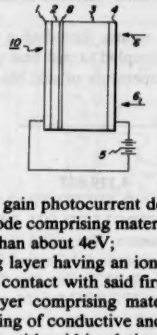
FAST ACTING GAIN PHOTOCURRENT DEVICE

Kyler Fischer Nelson, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1976, Ser. No. 672,192

Int. Cl.[2] H01J *39/12*

U.S. Cl. 250—211 R **13 Claims**



1. A fast-acting gain photocurrent device comprising:

(a) a first electrode comprising material having a work function greater than about 4eV;

(b) an insulating layer having an ionization potential below about 8eV in contact with said first electrode;

(c) a biasing layer comprising material selected from the group consisting of conductive and semiconductive material in contact with said insulating layer;

(d) a photoconductive layer having an electrical conductivity less than said biasing layer and which preferentially conducts positive charge over negative charge in contact with said biasing layer; and

(e) a second electrode in contact with said photoconductive layer, the thickness ratio of said photoconductive layer to said insulating layer being at least about 10 to 1.

4,119,841

APPARATUS FOR THE IMPLEMENTATION OF A METHOD FOR PRODUCING A SECTIONAL VIEW OF A BODY

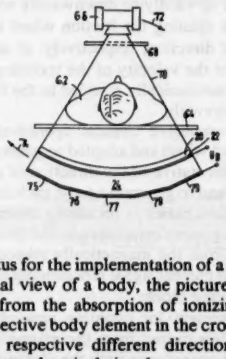
Ottomar Jantsch, and Karl Reiss, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 29, 1976, Ser. No. 671,049

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1975, 2514409

Int. Cl.[2] H01J *31/50*; G01T *1/24*

U.S. Cl. 250—213 VT **5 Claims**



1. Apparatus for the implementation of a method for producing a sectional view of a body, the picture elements of which are derived from the absorption of ionizing rays which pass through respective body element in the cross-sectional plane of the body in respective different directions and which after conversion into electrical signals, are evaluated and fed to a printer or a display screen, and in which a fan-shaped ray beam going through the body in the cross-sectional plane of the body is fed to a scintillator in the receiver, the photons of which release electrons which are subsequently accelerated and are then converted into the corresponding electrical signals, and in which a detector system and spatially resolving semiconductor

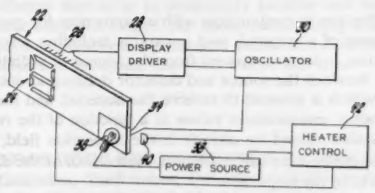
detectors for electron rays which are released in the photocathode of an electronic vacuum image converter is provided, the scintillator of which is provided as the receiver of the fan-shaped ray beam, wherein the improvement comprises spatially resolving semiconductor detectors each having associated therewith a charge transfer element, in which the formation of the signal is accomplished by charge storage and charge transfer in the semiconductor body of said semiconductor detectors, said semiconductor detectors each forming a common structural element with their associated charge transfer elements with several semiconductor detectors and their associated transfer elements provided with a common semiconductor body, said semiconductor body being one of the group consisting of N conduction silicon with a high resistivity of at least 600 ohm/cm and P conduction silicon with a resistivity af at least 1800 ohm/cm, said body reduced to a thickness of at most, 80 μm and the surface opposite the charge transfer electrodes provided as the receiving surface for the electron beams.

4,119,842

HEATER CONTROL SYSTEM FOR LIQUID CRYSTAL DEVICE

Daniel B. Hayden, Port Huron; George W. Smith, and Michael Kaplit, both of Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 17, 1977, Ser. No. 807,376
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—201 **6 Claims**



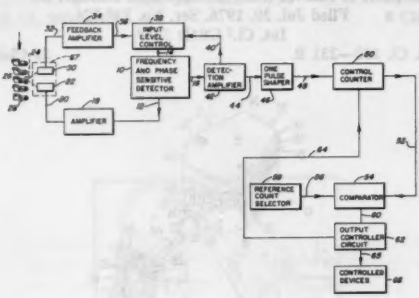
1. A heater control system for a liquid crystal device of a type having a light transmission state dependent on the frequency of an electrical control signal applied thereto, the device having a first light transmission state when an electrical signal having a frequency below a crossover frequency is applied to the device, and otherwise having a second light transmission state, said crossover frequency increasing as the temperature of said device increases, and said device having a predetermined desired crossover frequency when the temperature of the device has a predetermined value, means for heating the device, means for applying to the device a test signal of a predetermined frequency less than said desired crossover frequency by a slight amount, means for detecting the light transmission state of said device when said test signal of said predetermined frequency is applied thereto, and a control circuit responsive to the light transmission state of the device for energizing the heating means when the detected light transmission state is indicative of a temperature of said device that is below the value that corresponds to said desired crossover frequency, thus assuring that said device will attain a temperature sufficient to respond to an applied control signal of frequency no greater than the frequency of the test signal.

4,119,843

ARTICLE DETECTION SYSTEM WITH SYNCHRONOUS DEMODULATION

James J. Hinds, La Grange, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Feb. 11, 1977, Ser. No. 767,897
Int. Cl.[2] G01D *21/04*
U.S. Cl. 250—222 PC **6 Claims**



1. A system for sensing and detecting each of a plurality of moving, closely spaced articles comprising:

first transducer means for producing a luminous sensing signal;

frequency sensitive circuit means generating a continuous fixed frequency modulating signal, said frequency sensitive circuit means being responsive to a signal of said fixed frequency in phase with said generated signal for generating a first output and being responsive to the absence of a signal of said fixed frequency in phase with said generated signal for generating a second output;

first circuit means for applying said fixed frequency signal to said first transducer means to effect oscillation of said sensing signal at said fixed frequency,

second transducer means spaced from said first transducer means for sensing said luminous sensing signal and for producing an oscillating feedback signal representative thereof;

second circuit means for applying said oscillating feedback signal to the input of said frequency and phase sensitive circuit means in phase with said generated fixed frequency signal; and

a housing containing said first and second transducer means at positions spaced from the periphery of said housing and from each other, said housing defining means for directing said sensing signal from said first transducer means of a volume located at the periphery of said housing and spaced from said first and second transducer means for impingement on each of the plurality of articles passing through said volume, for directing said sensing signal impinging on each of said articles to said second transducer means and for precluding said sensing signal from said second transducer means in the absence of an article in said volume, said directing means including:

a pair of channels diverging from a point of intersection at said periphery of said housing, one of said channels extending to said first transducer means and the other of said channels extending to said second transducer means, said channels defining light paths extending from each of said transducer means to said impingement volume where said light paths intersect in said impingement volume, the dimensions of said channels along a line generally parallel to the movement of said articles through said volume being substantially smaller than the dimension of said articles in the direction of said movement;

whereby said luminous sensing signal passing through said one of said channels and impinging on an article passing through said impingement volume is reflected to said

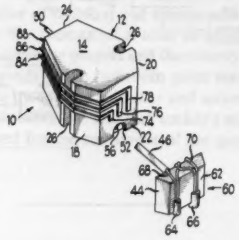
second transducer means through the other of said channels.

4,119,844

PHONOGRAPH CARTRIDGE AND SENSOR ASSEMBLY

Howard J. Morrison, Deerfield; Donald K. Fletchic, Arlington Heights, both of Ill., and Ralph H. Baer, Manchester, N.H., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jul. 30, 1976, Ser. No. 710,024
Int. Cl.[2] G01D 5/34
U.S. Cl. 250—231 R **21 Claims**



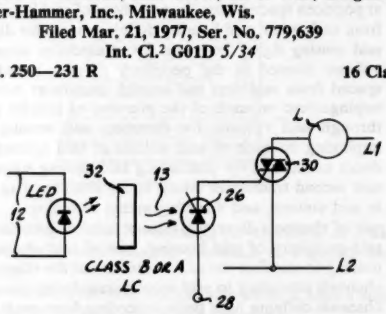
1. A phonograph cartridge for mounting within a cartridge shell on the free end of a phonograph tone arm, comprising:
a cartridge including an internal electro-mechanical transducer;
a stylus connected to the electro-mechanical transducer for tracking a record groove; and
an electro-optic sensor mounted on the cartridge in proximity to said stylus; said cartridge including a first and second set of connector pins for mounting the cartridge in a suitable cartridge shell on a phonograph tone arm, said first set of pins providing electrical connections between the electro-mechanical transducer and an amplifier, and said second set of pins for providing electrical connections between the electro-optic sensor and a land sensing electronic circuitry.

4,119,845

THERMALLY-SENSITIVE, PHOTO-CONTROLLED SEMICONDUCTOR SWITCHING SYSTEMS

Stanley V. Jaskolski, Sussex; Robert W. Lade, Waukesha, and Herman P. Schutten, Elm Grove, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 21, 1977, Ser. No. 779,639
Int. Cl.[2] G01D 5/34
U.S. Cl. 250—231 R **16 Claims**



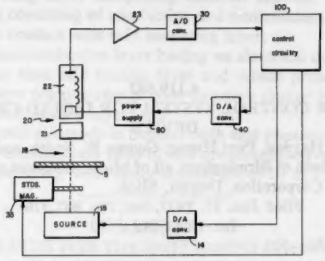
1. An electrical power switching system comprising:
an electric power supply source;
a load device;
means comprising a photo-sensitive, semiconductor switching element operable upon activation thereof for controlling application of power from said source to said load device;
a light source normally operable to provide light impinging on said photo-sensitive, semiconductor switching element for activation thereof;
thermally-sensitive, variable light transmission means interposed in the light path between said light source and said photo-sensitive, semiconductor switching element to vary the light passing through said light transmission means thereby to control said photo-sensitive, semiconductor switching element in response to change in temperature of said thermally-sensitive, variable light transmission means;
and means coupling heat from said semiconductor switching element to said thermally-sensitive variable light transmission means.

4,119,846

NON-CONTACTING GAGE APPARATUS AND METHOD

Stephen Outhwaite, Clarks Summit, Pa., and James C. Majure, Huntsville, Ala., assignors to Sangamo Weston, Inc., Archbald, Pa.

Filed Feb. 3, 1977, Ser. No. 765,180
Int. Cl.[2] G01D 18/00; G21K 7/00; G01N 23/00
U.S. Cl. 250—252 **12 Claims**

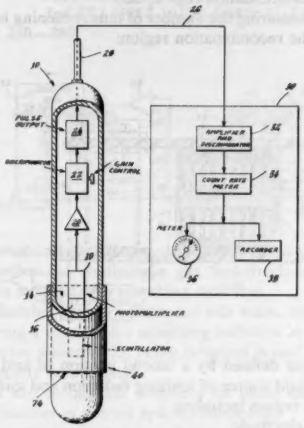


5. For use in conjunction with an apparatus for gaging the thickness of a material, said apparatus including a source of radiation, a detector spaced from the source of radiation, the space between the source and detector defining an inspection field which is adapted to receive the material, and means for generating measurement values as a function of the radiation attenuation caused by objects in the inspection field; an improved method for calibrating the source and/or the detector, comprising the steps of:
(a) storing a first set of measurement values associated with standard pieces of known thickness temporarily positioned in the inspection field;
(b) determining and storing a first function which represents the relationship between the thickness of the standard pieces and the measurement values determined therefrom;
(c) storing a second set of measurement values associated with material samples of known thickness temporarily positioned in the inspection field;
(d) determining and storing a second function which represents the relationship between the relative attenuation attributable to the standard pieces and the relative attenuation attributable to the material samples for different thicknesses thereof;
(e) storing an operator-entered nominal thickness for said material;
(f) determining the expected measured value which would be obtained upon insertion of material of nominal thickness in the inspection field by computing the expected measured value from the operator-entered nominal thickness in conjunction with said first function and said second function; and
(g) adjusting the source and/or detector in accordance with the determined expected measured value.

4,119,847
CALIBRATOR FOR RADIOACTIVITY WELL LOGGING TOOLS

James A. Waggoner, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 28, 1976, Ser. No. 736,660
Int. Cl.[2] G01D *18/00*
U.S. Cl. 250—252 8 Claims



1. A portable calibrator for radioactivity logging tools having a substantially cylindrical housing adapted to be moved in a borehole and a gamma radiation detector carried by said housing, said calibrator comprising:

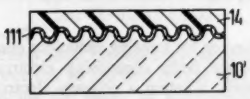
a flexible sheet that can be wrapped around the portion of said housing carrying the radiation detector and is of sufficient size so as to completely encircle said housing portion and to extend for about one housing diameter above and one housing diameter below said detector; and

a radioactive substance dispersed within said sheet.

4,119,848
IONOGRAPHIC RECORDING OF X-RAY IMAGES

Gerd Goldmann, Taufkirchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 3, 1977, Ser. No. 803,213
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1976, 2626068
Int. Cl.[2] G03G *5/022, 15/00, 16/00*
U.S. Cl. 250—315 A 6 Claims

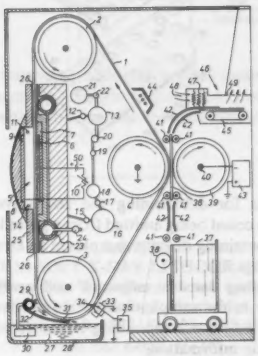


1. A device having a thermoplastic coating for ionographically recording x-ray images in which connection this thermoplastic coating forms a laminate with a transparent substrate and this laminate has disposed on it a transparent heating coating and an electrode in the form of a lamina, characterized in that to form an electrically efficient grid on the side facing the substrate **10, 10'** the thermoplastic coating **14** exhibits a corrugated structure and in that the electrode **13, 111** in the form of a lamina is applied on this corrugated side of the thermoplastic coating **14** and exhibits a corresponding corrugated structure.

4,119,849
RADIOGRAPHY

Willy Gommaire Verlinden, Edegem, and Jozef Eduard Mariën, Boechout, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Mar. 17, 1976, Ser. No. 667,565
Claims priority, application United Kingdom, Mar. 19, 1975, 11466/75
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—315 A 8 Claims



1. A method for recording and reproducing a pattern of penetrating radiation comprising radiation selected from the group consisting of X-rays and γ-rays, wherein said method comprises the steps of:

(a) exposing to a pattern of said penetrating radiation an ionizable fluid contained in a chamber between an electrode and an insulating obverse surface area of an elongated endless belt having at least one such surface area thereon and passing through one side of said chamber while applying a DC-potential difference between said electrode and an electrode adjacent the reverse surface of the endless belt, to thereby form a pattern of positive or negative charge carriers in said fluid which are biased by said potential onto said insulating surface area of said endless belt, creating an electrostatic charge pattern on said insulating surface area, the side of said chamber through which said belt passes being immersed in an insulating liquid to form a seal around said belt,

(b) advancing said belt to remove said charged surface area from said chamber and pass the same through said insulating liquid,

(c) contacting said charged surface area with an electrostatically attractable material contained in said insulating liquid to develop said pattern into a visible image,

(d) transferring said image of electrostatically attracted material to a receptor material,

(e) neutralizing residual charge on said surface area,

(f) cleaning said surface area by effecting the removal of residual electrostatically attracted material before bringing said surface area in contact again with said ionizable fluid, and

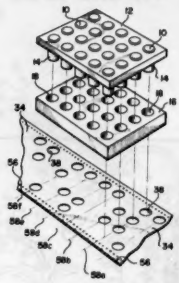
(g) returning said cleaned surface area of said belt into said chamber for a repetition of said steps.

4,119,850

MULTIPLE SAMPLE, RADIOACTIVE PARTICLE COUNTING APPARATUS

Reddy Reddy Venketeshwara Reddy, Deerfield, and David Mathews Kelso, Wilmette, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 5, 1977, Ser. No. 784,899
Int. Cl.[2] G01T *1/00*; H01J *3/14*; G01T *1/20*
U.S. Cl. 250—328 **13 Claims**



3. Apparatus for determining the respective radioactive particle sample count being emitted from a plurality of radioactive particle containing discrete samples in an array, said apparatus comprising:

a light emitting detector adjacent said array of samples responsive to the sample emitted radioactive particles to emit light pulses corresponding to the received radioactive particle information;

encoder means intermediate said sample array and said light emitting detector to modulate said radioactive particle information to enable said detector to sequentially respond to different respective coded combinations of the radioactive particles emitted from more than one but less than all of said plurality of samples in the sample array to provide correspondingly modulated light pulses;

said encoder means including movable coded means sequentially movable, in distinct coding sequences, between said sample array and said light emitting detector for sequentially blocking the radioactive particles emitted from more than one but less than all of said plurality of samples in accordance with said different respective coded combinations each associated with one of said distinct coding sequences;

said movable coded means movable in a series of said distinct coding sequences to enable said detector to sequentially respond to at least as many of said different coded combinations as the number of samples being analyzed; and

conversion means responsive to said emitted light pulses from said detector in each of said distinct coding sequences to provide corresponding decodable electrical signals for deriving said respective sample count.

4,119,851

APPARATUS AND A METHOD FOR DETECTING AND MEASURING TRACE GASES IN AIR OR OTHER GAS BACKGROUNDS

B. Wayne Castleman, Largo, and Bernard C. Schluter, Clearwater, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 23, 1977, Ser. No. 809,219
Int. Cl.[2] G01T *1/18*
U.S. Cl. 250—382 **14 Claims**

1. Apparatus for detecting trace amounts of vapors or gases in air or other gaseous backgrounds, said apparatus comprising:

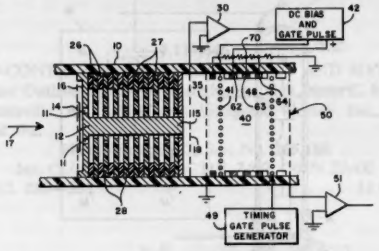
a housing defining a passage for flow of gas between an input and an output;

a source of ionizing radiation positioned in said passage near said input for creating ions in said gas;

a recombination region defined by first portion of said passage between said source of ionizing radiation and said output, said recombination region including

means for facilitating recombination of ions in said gas entering the recombination region, and

means for measuring the number of ions remaining in the gas leaving the recombination region;



a drift region defined by a second portion of said passage between said source of ionizing radiation and said output, said drift region including

a collector electrode,

means for establishing a drift potential for causing said ions to drift toward said collector electrode,

gating means for allowing only ions of predetermined mobility to reach said collector electrode, and

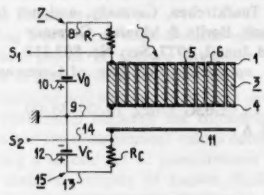
means for measuring the number of ions reaching said collector electrode.

4,119,852

SOLID DETECTOR FOR IONIZING RADIATION

Henri Rougeot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 25, 1977, Ser. No. 762,287
Claims priority, application France, Jan. 30, 1976, 76 02586
Int. Cl.[2] G01T *1/24*
U.S. Cl. 250—370 **5 Claims**



1. A solid detector for ionizing radiations comprising:

a semi-conductor body comprising electron multiplying microchannels, wherein a primary electron produces a plurality of secondary electrons;

a semi-conductor body biassing circuit, which is associated with said semi-conductor body and through which a signal called semi-conductor signal passes with each ionizing radiation;

a collector;

means for biassing said collector in such a way that said collector picks up said secondary electrons produced by said radiations by means of primary electrons, thus generating a collector signal;

a gate which is controlled by said collector signal;

a level selector, which is controlled by said gate in order to

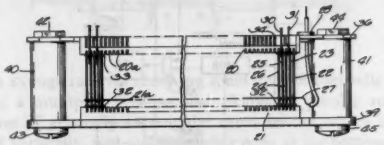
receive said semi-conductor signal when said collector signal allows the latter signal to pass.

4,119,853

MULTICELL X-RAY DETECTOR

Peter Stephen Shelley, Brookfield; William Darrell Love, and Barry Newell Stone, both of Waukesha, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 9, 1977, Ser. No. 804,980
Int. Cl.[2] H01J *39/28*; G01N *21/52*
U.S. Cl. 250—385 30 Claims



9. A multicell X-radiation detector comprising:
a chamber for confining a gas that produces electronion pairs incidental to absorbing radiation,
said chamber having bottom and side walls, one of said walls having a window for admitting radiation to said chamber,
a detector assembly for being mounted in said chamber, said assembly comprising:
first and second bar members for being disposed in said chamber in spaced apart relationship,
means for securing said bar members in spaced apart relationship,
first and second insulating members fastened to said bar members, respectively, said insulating members each having a side in which there is a plurality of grooves, said grooved sides being faced toward each other,
a plurality of electrode plates secured in juxtaposed spaced apart relationship by having one pair of opposed edges engaged in corresponding grooves in said insulating members, respectively, said plates also having front edges, the spaces between said plates constituting cells for being occupied by said gas,
means for supporting said assembly in said chamber for said front edges of said plates to be at a uniform distance from said window so the layer of gas between said window and said front edges is uniform,
a cover for sealingly closing said chamber, and
means for establishing electric circuits from said plates to the exterior of said chamber.

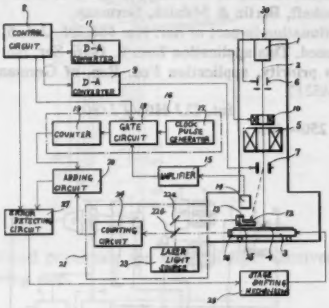
4,119,854

ELECTRON BEAM EXPOSURE SYSTEM

Kazumitsu Tanaka, and Nobuo Goto, both of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1977, Ser. No. 852,435
Claims priority, application Japan, Nov. 25, 1976, 51-141415
Int. Cl.[2] H01J *37/00*
U.S. Cl. 250—397 8 Claims

1. In an electron beam exposure system comprising an electron beam source and an electron optical system for converging and deflecting the beam, an automatically positionable workpiece stage and control means for positioning the electron beam and the workpiece stage the improvement comprising:
(a) a reference mark positioned in the vicinity of the workpiece exposure area fixed relative to the optical system,
(b) first means for measuring a distance from the reference mark to a reference point in the electron beam raster by scanning the beam over the reference mark,
(c) second means for measuring a distance between the reference mark and a reference point fixed relative to the workpiece,
(d) means for combining the outputs of the first and second measuring means and comparing to a reference signal to develop an error signal, and



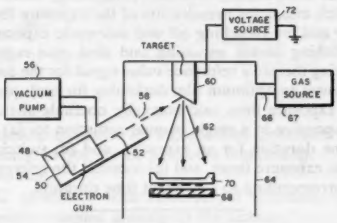
(e) means associated with said control means for changing the electron optical system conditions and/or the workpiece position to eliminate the error signal.

4,119,855

NON VACUUM SOFT X-RAY LITHOGRAPHIC SOURCE

Stephen E. Bernacki, Worcester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 8, 1977, Ser. No. 813,934
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—402 7 Claims



1. A soft x-ray source comprising:
a source of beam of charged particles having a velocity,
a first enclosure containing said source,
said first enclosure having an exit port aligned with said beam to allow said particles to exit the first enclosure,
a vacuum pumping system connected to said first enclosure to reduce the pressure in said first enclosure to a pressure which does not substantially scatter the particles,
a second enclosure,
a target in said second enclosure,
the exit port of said first enclosure being within said second enclosure,
said beam of particles exiting from said first enclosure through said exit port to enter said second enclosure and strike said target at a velocity to produce soft x-rays,
a source of gas,
an entrance port to said second enclosure connected to said gas source to provide gas in excess of atmospheric pressure to fill said second enclosure with said gas,
means for inserting material into said second enclosure,
whereby soft x-ray produced at said target pass through said gas to said material.

4,119,856

X-RAY DIAGNOSTIC APPARATUS FOR PRODUCING SERIES EXPOSURES

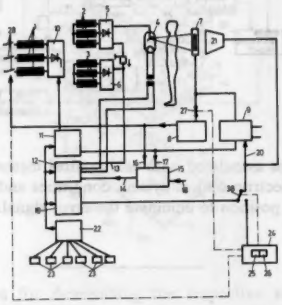
Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation-in-part of Ser. No. 486,205, Jul. 5, 1974, abandoned. This application Dec. 9, 1976, Ser. No. 749,038

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1973, 2345317

Int. Cl.² H05G *1/30*

U.S. Cl. 250—402 **6 Claims**



1. In an X-ray diagnostic apparatus having an X-ray tube for producing series exposures, particularly moving-picture exposures, an automatic exposure timer for terminating each exposure upon attaining a predetermined ray dosage providing an optimum film darkening; and a dose rate regulator adapted to reduce the X-ray tube voltage when the exposure time set by said automatic exposure timer drops below a lower time limit and to increase the voltage when the exposure time exceeds an upper time limit, the improvement comprising; manually operable switch means for preselection of the exposure time for an exposure and for switching off said automatic exposure timer, said switching means actuating said dose rate regulator by transmitting thereto a reference value signal for the dosage rate which causes an optimum film darkening for each particularly selected exposure time, said manually operable switch means being responsive to a single manual actuation to: (a) select an exact time duration for an exposure, and (b) switch off said automatic exposure timer, and (c) transmit the reference value signal corresponding to said exact time duration.

4,119,857

SYSTEM FOR PROGRAMMED DRAWING BY PARTICLE BOMBARDMENT

Serge Desperques-Volmier, Paris, France, assignor to Thomson-CSF, Paris, France

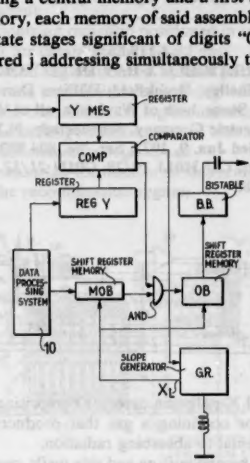
Filed Jan. 25, 1977, Ser. No. 762,796

Claims priority, application France, Jan. 30, 1976, 76 02585

Int. Cl.² H01J *29/00*

U.S. Cl. 250—492 A **4 Claims**

1. In an automatic device for forming programmed pattern by electron bombardment on a sample controlled by a data processing system, by forming upon the substrate an elementary rectangular image of a diaphragm, electronically controlled means for deflecting said image in a direction OX parallel to one of its sides, and scanning said sample line by line, mechanical displacing means in the OY direction perpendicular to OX a control electrode for modulating the beam intensity by all or nothing, a two stable state device controlling said electrode, an interface circuit controlled by said data processing system comprising a buffer memory and an assembly of memories, an improvement in said interface circuit consisting of a clock controlled slope generator having a period P, connected to said deflecting means for scanning each line and delivering in response N recurrent pulses numbered respectively **1** . . . j . . . N of period $P/N = \tau$ said assembly of memories comprising a central memory and a first and second shift register memory, each memory of said assembly, comprising N two stable state stages significant of digits "0" and "1", said pulse numbered j addressing simultaneously the stages A_j, B_j,



C_j respectively of said first, said central and said second memory, means connected to said stage output for triggering said two bistable state device at time $j\tau + \tau/2$ when the addressed stage Aj is in the "1" state, at time $j\tau$ when the addressed stage Bj is in the "1" state, at time $j\tau - \tau/2$ when stage Bj is in the "1" state.

4,119,858

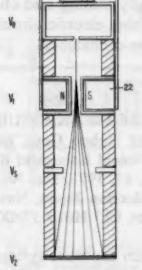
COMPACT LONG-LIVED NEUTRON SOURCE

Lawrence Cranberg, 1205 Constant Springs Dr., Austin, Tex. 78746

Filed Aug. 11, 1976, Ser. No. 713,402

Int. Cl.² G21G *4/02*

U.S. Cl. 250—499 **6 Claims**

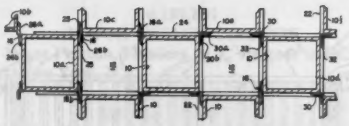


1. An apparatus for generating neutrons suitable for use in a well-bore comprising a source of deuterium ions, means for accelerating and focusing said ions to a target, means for supplying a magnetic field whose direction rotates about the direction of said ions as an axis, said magnetic field deflecting said ions according to their charge-to-mass ratio before said ions impinge said target, so that said ions impinge said target in a family of concentric annuli, each annulus being impinged by ions predominantly of a single value of charge-to-mass ratio, said target containing material which is neutron-emissive when impinged by deuterium ions.

4,119,859
FUEL STORAGE RACK

Ronald C. Karzmar, Brighton, and Robert H. Stamm, Canton, both of Mich., assignors to Brooks & Perkins, Incorporated, Southfield, Mich.

Filed May 23, 1977, Ser. No. 799,704
Int. Cl.[2] G21F 5/00
U.S. Cl. 250—507 11 Claims



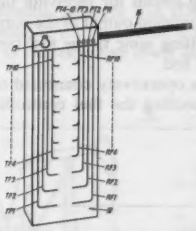
1. A storage rack for receiving spent nuclear fuel cells comprising a multiplicity of parallel elongated tubular storage modules of generally rectangular cross-section which in use extend vertically, said modules being open at the bottom ends thereof and having flat sides incorporating a neutron absorbing material, said modules being disposed in an array which in horizontal section forms a checkerboard pattern in which all modules are arranged in a first series of adjacent parallel rows and a second series of adjacent parallel rows perpendicular to the first series, in which in each row the modules occupy only alternate squares of the pattern and leave the remaining squares vacant, and in which in adjacent parallel rows the modules are staggered, whereby at the interior of the array, each module has four modules disposed diagonally adjacent the corners thereof and has four open spaces adjacent the flat sides thereof, a bracket connecting each module to the diagonally adjacent modules, each bracket being elongated in the direction of the length of the modules and consisting of two arms which extend laterally from the intermediate portion of said module, one arm of each of said brackets being welded to a side of diagonally adjacent modules adjacent the corners thereof, each module at the interior of the array having the brackets at a side thereof located outwardly from the inner portion of the array which have arms extending outwardly of the array, the pair of bracket arms at the adjacent outer corners of a pair of adjacent spaced apart inner modules being spaced apart to engage the opposite sides of a single added module placed therebetween to substantially close the side of the open space between said pair of adjacent inner modules, whereby the outwardly extending arms of said pair of brackets are readily accessible for effecting attachment thereof to the sides of said added module in the open spaces to the sides of said added module.

4,119,860
FLUID MEASUREMENT

Cornelius Leonard Gooley, 63 Staughton Rd., Glen Iris, Victoria 3146, Australia

Continuation-in-part of Ser. No. 647,439, Jan. 8, 1976, abandoned. This application Feb. 14, 1977, Ser. No. 768,626
Int. Cl.[2] G01N 21/26
U.S. Cl. 250—577 23 Claims

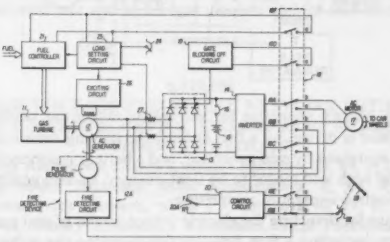
1. A method of sensing with respect to a fluid boundary which comprises the steps of:
- transmitting light from a constant source;
- receiving light transmitted from said source;
- producing an electrical signal related to the intensity of said received light; and
- detecting at least one extremum in said signal, said at least one extremum occurring when said fluid boundary is positioned proximate the beam of light received in said receiving step.



4,119,861
STARTING APPARATUS FOR GAS TURBINE-GENERATOR MOUNTED ON ELECTRIC MOTOR DRIVEN MOTORCAR

Choichi Gocho, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Japan

Filed Oct. 15, 1975, Ser. No. 622,626
Int. Cl.[2] B60L 11/06
U.S. Cl. 290—13 8 Claims



1. A starting apparatus for a gas turbine-generator mounted on an electric motor driven motorcar comprising:
- a gas turbine,
- an A.C. generator with A.C. output terminals, the A.C. generator coupled directly to the turbine,
- a rectifier with D.C. output terminals, the rectifier connected to the A.C. output terminals of the A.C. generator,
- a battery device connected in a floating manner to the D.C. output terminals of the rectifier,
- an inverter having D.C. input terminals connected to the floating battery device in parallel and A.C. output terminals from which an A.C. output is derived,
- a control circuit connected to the inverter for controlling the speed of the motorcar,
- at least one A.C. motor energized by the A.C. output of the inverter for driving the motorcar,
- a switching device connecting he A.C. output terminals of the inverter to the A.C. output terminals of the A.C. generator when the gas turbine starts and connecting the A.C. output terminals of the inverter to the A.C. input terminals of the A.C. motor after the gas turbine is started,
- a fire detecting device connected to the switching device for detecting the self ignition of the gas turbine,
- a fuel controller connected to the gas turbine for controlling the quantity of fuel supplied to the gas turbine,
- an exciting circuit connected to the A.C. generator for exciting the A.C. generator,
- a setter for setting the speed of the gas turbine,

a current transformer connected to the output of the A.C. generator,

a load setting circuit disposed between the fuel controller and the exciting circuit for receiving the output of the setter and the deviation output of the current transformer and for transmitting same to the fuel controller and the exciting circuit, and

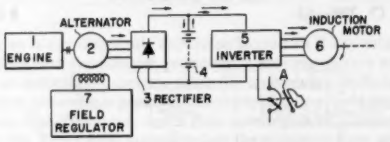
a switching means operatively connected to the switching device for controlling the fuel controller and the load setting circuit.

4,119,862

CONTROL APPARATUS OF ELECTRIC MOTOR CARS

Choichi Gocho, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawaski, Japan

Filed Sep. 29, 1975, Ser. No. 617,376
Claims priority, application Japan, Sep. 30, 1974, 49-112628
Int. Cl.[2] B60L *11/12*
U.S. Cl. 290—17 **3 Claims**



1. A control apparatus for an electric motor car wherein a generator is driven by a fuel engine, the driving motor of the car is energized by said generator, and a battery is connected in parallel with said motor to be float-charged by said generator, said control apparatus comprising

means for detecting the electric output power of said generator including a first detector for detecting the voltage of said generator, a second detector for detecting the current of said generator, and a multiplier for multiplying the output of said first detector and the output of said second detector thereby producing a signal proportional to the output power of said generator;

means including a first variable resistor which is set in accordance with the running condition of said car for producing an output which varies as a variable function of the output from said generator output power detecting means;

means for producing a reference signal;

means for comparing said variable output with said reference signal for adjusting the field current of said generator thereby maintaining the output of said generator at a substantially constant value irrespective of the running condition of said car;

an amplifier;

a second variable resistor for applying the output of said first detector to said amplifier for setting a voltage limit of said generator;

a third variable resistor for applying the output of said second detector to said amplifier for setting a current limit of said generator;

means for applying the output from said amplifier to said comparing means for comparing with said reference signal; and

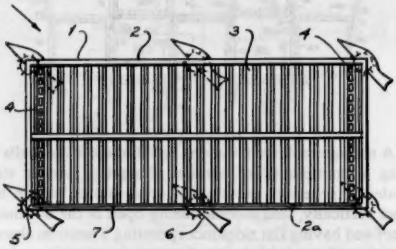
means connected in the circuit of the field winding of said generator to apply a feedback signal proportional to the field current to said amplifier thereby limiting the field current to a predetermined value.

4,119,863

COMBINED HIGH DENSITY SOLAR PANELS AND VERTICAL WIND TURBINES

Donald A. Kelly, 58-06 69th Pl., Maspeth, New York, N.Y. 11378

Filed Aug. 13, 1975, Ser. No. 604,163
Int. Cl.[2] H02P *9/04*
U.S. Cl. 290—55 **10 Claims**



1. A combined high density solar cell and panel array with vertical wind turbines comprising multiple identical elongate panels containing multiple square silicon solar cells on both sides of said elongate panels,

each of said multiple identical elongate panels is pivotally mounted along their longitudinal center axis within a rectangular elevated open frame structure,

multiple vertical support posts supporting said rectangular elevated open frame structure, each lower end of said multiple vertical support posts is mounted to flat level rooftop surfaces,

a crank and linkage arrangement secured at one end of each of said multiple identical elongate panels,

connection means for said crank and linkage arrangement to a crank arm and timing disc,

connection of said timing disc to a timing motor,

multiple elongate angled reflectors uniformly disposed on both elongate edges of said multiple identical elongate panels,

uniformly disposed supporting fins secured to said multiple elongate angled reflectors and to said multiple identical elongate panels,

multiple vertical spray washing pipes uniformly disposed around the perimeter of said rectangular elevated open frame structure,

each said multiple vertical spray washing pipe is fitted with a spray head at the top of said spray washing means,

multiple vertical rotary wind turbines centrally disposed on each of said multiple vertical support posts comprised of vertical identical flat vanes joined together by multiple identical flat slotted discs,

orbiting bearings uniformly disposed on two of said multiple identical flat slotted discs,

a clamp-on collar disposed around each of said multiple vertical support posts,

a thrust ball-bearing axially disposed between said clamp-on collar and one of said multiple identical flat slotted discs,

a flat gear secured to the lowest of said multiple identical flat slotted discs by means of multiple ball-bearing pins of said orbiting bearings,

a pinion meshing with said flat gear axially disposed on the shaft of a vertically disposed electrical generator,

mounting means for said vertically disposed electrical generator on the surface of flat roofs,

a formed sheet metal housing disposed fully over said flat gear and pinion and said vertically disposed electrical generator,

a built-up lightweight fairing hoods disposed directly over said multiple vertical rotary wind turbines,

independent orbiting ball-bearing means for said built-up

lightweight fairing hoods disposed at the upper and lower ends,

a clamp-on collar disposed around each of said multiple vertical support posts,

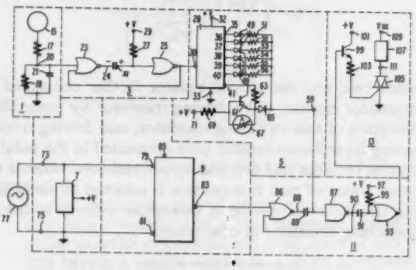
a thrust ball-bearing disposed between said clamp-on collar and the upper surface of said built-in lightweight fairing hood.

4,119,864

TOUCH SWITCH CIRCUITS

Cesare James Petrizio, Flanders, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 23, 1976, Ser. No. 716,539
Int. Cl.² H01H *35/00*
U.S. Cl. 307—116 **8 Claims**



1. A touch switch circuit for providing individual output signals, each one of which is made to occur a programmable time after the occurrence of each zero-crossing of an a.c. signal, comprising:

means including a touch plate responsive to the human touch for producing an output signal indicative thereof;

control means responsive to said output signal, for producing a control signal;

zero-crossover detector means responsive to said a.c. signal, for producing a first output pulse in response to each zero-crossing of said a.c. signal; and

delay means reponsive to each output pulse of said zero-crossover detector means for producing a second output pulse which is time delayed with respect to said first output pulse in proportion to the magnitude of said control signal and including;

a resistive network;

means responsive to said control signal of said control means for passing current through a selected resistance of said network;

a charging circuit including the selected resistance and a capacitor;

a NOR gate having a pair of input terminals, one of which is receptive of said zero-crossing signals, and an output terminal coupled to one end of said capacitor; and

an inverter having an input terminal connected to the other end of said capacitor and also connected to receive the current supplied through said selected resistance, while the output thereof is connected to the other input terminal of said NOR gate, said inverter producing an output voltage whenever the charge on said capacitor is below a given level.

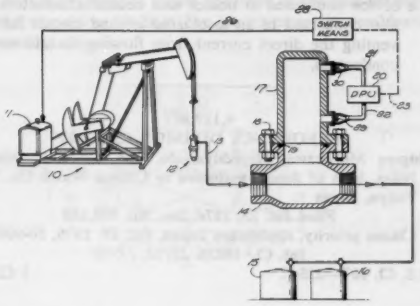
4,119,865

FLUID SENSITIVE SHUTDOWN FOR WELL PUMP

Peter Platt Elderton, Fountain Valley, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 18, 1977, Ser. No. 825,771
Int. Cl.² H01H *35/18*
U.S. Cl. 307—118 **2 Claims**

1. A fluid sensing system comprising: a unit adapted to pump oil from a well; means actuable to disable said unit; a pipeline connected from said unit to carry oil pumped from said well by said unit; a vertical member sealed to said pipeline, said member having a cavity in communication with the interior of said pipeline; a differential pressure unit (DPU) having low and high pressure inlets in fixed positions relative to said member and responsive to the respective lower and higher pressures in



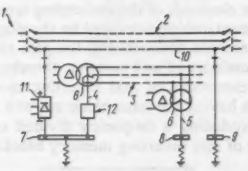
the interior of said cavity respectively above and below each other, said DPU having an output device to actuate said means when the difference between the pressures within said high and low pressure inlets is a predetermined magnitude; and apparatus to override said means when it is appropriate to restart said unit and to fill said pipeline and/or said member.

4,119,866

HIGH VOLTAGE ELECTRICAL NETWORK WITH DC ICE-MELTING DEVICE AND CURRENT RETURN THROUGH GROUND

Georgy Andreevich Genrikh, ulitsa Chekistov, 10, kv. 3; Leonid Alexeevich Nikonets, ulitsa Khasanskaya, 8, kv. 4; Petr Romanovich Khrusch, ulitsa P. Morozova, 4, kv. 3, all of Lvov; Dmitry Korneevich Kovalenko, ulitsa Pushkina, 183, kv. 9, Kustanai; Valentin Ivanovich Sidorov, Komsomolskaya ulitsa, 33, kv. 6, Kustanai; Jury Nikolaevich Belozerov, ulitsa Tafana, 161, kv. 13, Kustanai, and Evgeny Vasilievich Gorelin, ulitsa Lenina, 38, kv. 42, Kustanai, all of U.S.S.R.

Filed Feb. 14, 1977, Ser. No. 768,288
Int. Cl.² H02J *11/00*
U.S. Cl. 307—147 **20 Claims**



1. A high-voltage electrical network comprising:

a plurality of lines of said high-voltage electrical network, each line having several circuits, one of said plurality of lines having a heated circuit whereon the icing is melted;

neutral conductors of said high-voltage electrical network, at least two of said neutral conductors being grounded;

at least two ground circuits, at least one of said ground circuits being connected to one of said neutral conductors and serving as a first operational grounding means and another ground circuit serving as a second operational grounding means;

a device for melting the icing on one of said lines by the use

of a direct current, connected to said heated circuit of one of said lines and to one of said ground circuits,

said heated circuit of one of said lines, said two ground circuits serving as said first and second operational grounding means, said device for melting the icing on one of said lines and the ground serving as a return conductor being connected in series to one another and forming a circuit for melting the icing on one of said lines; and

a device connected to one of said neutral conductors and also connected to an associated ground circuit for preventing the direct current from flowing to said neutral conductors.

4,119,867

FREQUENCY DIVISION CIRCUIT

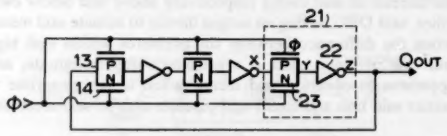
Shigeru Morokawa, Higashiyamato, and Yukio Hashimoto, Niiza, both of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Jul. 23, 1976, Ser. No. 708,188

Claims priority, application Japan, Jul. 25, 1975, 50-90052

Int. Cl.[2] H03K *23/02, 17/60*

U.S. Cl. 307—225 C **5 Claims**



1. A frequency division circuit comprising inverting memory blocks of an odd number each including: (1) a temporary memory switching element having a P channel field effect transistor and an N channel field effect transistor each of which are connected in parallel opposition, said P and N channel field effect transistors having threshold voltages of VTP_2 and VTN_2, respectively; means for applying control signals of the same phase to the gate electrodes of said P and N channel field effect transistors, said memory blocks also including: (2) an inverter circuit including a pair of field effect transistors having gate electrodes connected to one of two connected conductive electrodes of said temporary memory switching element which are formed by the parallel connection of the complementary field effect transistors; and means for serially connecting said inverting memory blocks in a closed ring with the output of the inverter of a preceding block connected to the conductive electrode of the succeeding temporary memory switching element, which is located on the side opposite to the conductive electrode connected to the gate electrodes of said field effect transistors of said inverter, thereby controlling the control gate electrodes of said inverting memory block by control signals having the same phase and at a frequency to be divided for producing a frequency divided output from the output of one of said inverting memory blocks.

4,119,868

CIRCUIT ARRANGEMENT

Robert Schach, Talheim, and Peter Scholl, Weinsberg, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

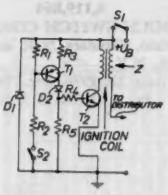
Filed Mar. 23, 1977, Ser. No. 780,362

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1976, 2612695

Int. Cl.[2] H03K *17/64*

U.S. Cl. 307—253 **5 Claims**

1. A circuit for controlling the supply of energy pulses to a coil, comprising a switching transistor connected so that its collector-emitter path presents a switchable path for delivery of energization current to the coil and connected to be unprotected against avalanche breakdown operation; resistance means connected in parallel with the base-emitter path of said transistor for preventing said transistor from being overloaded when undergoing avalanche breakdown operation, said resistance means being composed of series connected first and second resistors with the first resistor further connected to said



transistor base and the second resistor further connected to said transistor emitter; and a driving transistor for controlling the operation of said switching transistor, said driving transistor having its collector-emitter path connected to the point of connection between said first and second resistors; wherein the resistance value of said first resistor is selected to cause said driving transistor to operate in saturation when it is driving said switching transistor in conduction.

4,119,869

CONSTANT CURRENT CIRCUIT

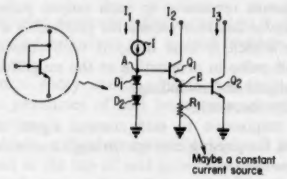
Masaru Hashimoto, Ayasemachi, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Japan

Filed Jan. 28, 1977, Ser. No. 763,675

Claims priority, application Japan, Feb. 26, 1976, 51-21060[U]

Int. Cl.[2] H03K *17/00;* **H03F** *3/04*

U.S. Cl. 307—296 R **2 Claims**



1. A constant current circuit formed on a single semiconductor pellet and comprising:

an emitter following stage having an input and an output, the emitter follower stage including a first transistor having its base connected to the input, a first resistor, and means for connecting the first resistor between the emitter of the first transistor and an external reference potential;

an output stage including a second transistor havings its base connected to the emitter of the emitter follower stage, and means for connecting the emitter of the second transistor to the external reference potential, whereby the collector current of the second transistor becomes an output current;

a diode connected to the input of the emitter follower stage;

a third transistor;

a second resistor connected between the base and the collector of the third transistor;

means for connecting the third transistor between the diode and the external reference potential; and

current power source means for supplying current to the diode.

4,119,870
READ-OUT AMPLIFIER CIRCUIT FOR A DYNAMIC MOS MEMORY

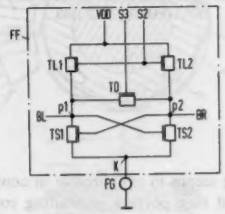
Klaus Zibert, Hohenschaeftlarn, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 19, 1977, Ser. No. 798,431

Claims priority, application Fed. Rep. of Germany, May 24, 1976, 2623219

Int. Cl.[2] H03K *5/20;* G11C *7/06;* H03K *3/353, 3/286*

U.S. Cl. 307—355 9 Claims



1. A read-out amplifier circuit for a dynamic MOS memory, comprising:

a flip-flop including a pair of circuit arms each comprising a switching transistor and a load transistor connected together in series at a connection point, each of said transistors having a source electrode, a drain electrode and a control electrode, said source electrodes of said switching transistors connected together to form a node;

a bit line including sub-portions connected to respective connection points for receiving signals from memory cells connected to the bit line sub-portions;

the connection point of each circuit arm connected to the control electrode of the switching transistor of the other circuit arm;

charging means for charging said node to a predetermined level before read-out of a memory cell;

a balance transistor having a source electrode and a drain electrode connected to respective connection points, and a control electrode for receiving a signal to render said balance transistor conductive for a predetermined interval; and

discharging means connected to said node, whereby that one of said switching transistors which receives a voltage change on its drain electrode resulting from a read-out signal is rendered conductive and said discharging means is operable to control the discharge of said node so that the other of said switching transistors is temporarily rendered conductive.

4,119,871
FUNCTION GENERATOR FOR THE PRODUCTION OF A VOLTAGE ACROSS A NODE TO WHICH ARE CONNECTED FLIP-FLOPS WHICH ARE ARRANGED IN BIT LINES OF A MOS MEMORY AND CONSISTS OF MOS TRANSISTORS

Klaus Zibert, Hohenschäftlarn, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

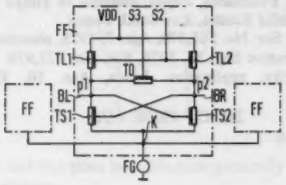
Filed Jun. 2, 1977, Ser. No. 802,815

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 2630797

Int. Cl.[2] H03K *5/20;* G11C *7/06;* H03K *3/353, 3/286*

U.S. Cl. 307—355 5 Claims

1. In a memory reading system of the type wherein, for each read-out circuit, the source electrodes of metal-oxide-semiconductor switching transistors of a flip-flop are connected together at a node which is common for all read-out circuits, the switching transistors are in separate arms of the flip-flops and have respective metal-oxide-semiconductor load transistors connected in series therewith, and the connection points of the load transistors and switching transistors are connected to respective bit line portions of a divided bit line, and wherein the switching transistors connected to the node are operable to pre-charge the node prior to a signal evaluation portion of a reading process and a function generator is connected to the node to controllably discharge the node during the signal evaluation portion of the reading process during which the load transistors are blocked so that each flip-flop connected to the node is triggered to a state governed by the read-out signal on the respective bit lines, the improvement in combination therewith, wherein:



said function generator comprises a pre-discharge circuit including inputs for receiving control signals and transistor means connected to said inputs and to the node for pre-discharging the node in response to said control signals, so that the switching transistors of the flip-flops are rendered conductive to place respective voltages on the bit line portions which are equal to the node voltage modified by the individual threshold voltages of the switching transistors.

4,119,872
DYNAMO ELECTRIC MACHINE

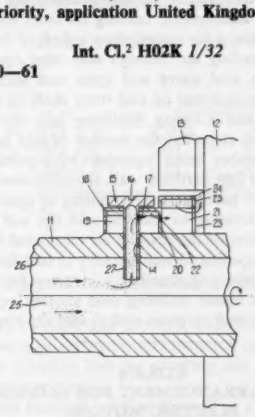
Peter Hunt, Shipley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 26, 1976, Ser. No. 670,776

Claims priority, application United Kingdom, Apr. 5, 1975, 14046/75

Int. Cl.[2] H02K *1/32*

U.S. Cl. 310—61 2 Claims



1. A dynamo electric machine comprising a hollow rotor shaft having an inner surface which bounds a longitudinal passageway along which cooling oil flows in use, and oil oulet means in the wall of said hollow shaft whereby oil is discharged from said passageway, said outlet means including a tubular element which extends substantially radially through the rotor shaft wall and which protrudes inwardly into said passageway from said inner surface of the shaft so as to receive oil from a region of the passageway spaced inwardly from the inner surface of the shaft, said element discharging oil at the exterior of the shaft into an annular weir member carried by and encircling the shaft and which presents an annular recess

to the shaft, oil discharged from said element collecting in use, as a result of centrifugal force in said recess and when said recess is full, overflowing an edge of said recess around the recess periphery so as to be thrown by centrifugal force, onto windings of the machine encircling said shaft and disposed generally radially outwardly from said edge of the recess, said element serving at least in part as the means securing said weir member to said shaft.

4,119,873

DYNAMOELECTRIC MACHINES

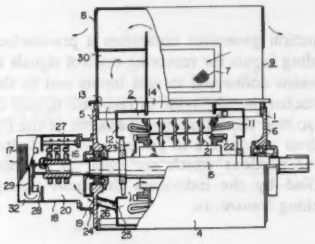
Fumio Sakurai, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 565,370, Apr. 7, 1975, abandoned. This application Sep. 16, 1976, Ser. No. 723,976

Claims priority, application Japan, Apr. 10, 1974, 49-40089[U]

Int. Cl.[2] H02K *9/26*

U.S. Cl. 310—56 **3 Claims**



1. In a dynamoelectric machine of the type comprising a housing, a stator and rotor contained in said housing, said housing including an inlet opening and a discharge opening for cooling air, tortuous passages between said inlet and discharge openings and in the interior of said housing for preventing foreign matter in atmospheric cooling air from entering into said stator and rotor, a fan mounted on a shaft of the rotor for circulating the cooling air through said inlet opening, said tortuous passages, said stator and rotor and said discharge opening, slip rings mounted on said rotor shaft on the outside of said housing, and a casing enclosing said slip rings and defining a slip ring chamber, the interior of said housing and said slip ring chamber being separated by a portion of said housing defining a first partition wall, the improvement which comprises a second partition wall including an annular portion mounted in said housing to encircle said fan and means for circulating a portion of the cooling air circulated by said fan through another opening in said housing in said first partition wall and into said slip ring chamber, said means for circulating including conduit means defining said another opening and connecting said second partition wall to said slip ring chamber.

4,119,874

BEARING ARRANGEMENT FOR ELONGATED ELECTRIC MOTORS

John Andrew Beavers, and Billy O. Dillion, both of Tulsa, Okla., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 11, 1977, Ser. No. 767,931

Int. Cl.[2] H02K *5/12*

U.S. Cl. 310—90 **5 Claims**

1. An elongated electric motor comprising:

a housing;

a homogeneous stator composed of a plurality of generally annular magnetic laminations, said stator being mounted in said housing;

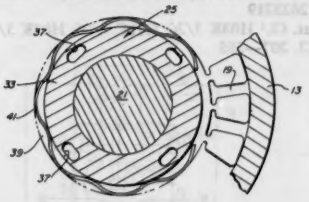
a shaft rotatably mounted within said stator;

a generally cylindrical rotor composed of spaced apart rotor sections mounted on said shaft;

a plurality of spaced bearing means between adjacent rotor sections and supporting said shaft;

each of said bearing means having a ring portion engaging said stator;

each said ring portion having a groove therein intermediate its ends, the open portion of which faces said stator; and



elongated spring means in said groove in contact with said stator and said ring portion preventing rotation of said bearing means with said shaft because of the magnetic field of the stator.

4,119,875

DIRECT CURRENT ELECTRIC MOTOR

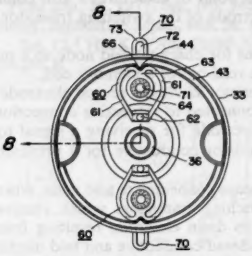
Ichiro Noguchi; Chiaki Hayashi, and Hisashi Muroga, all of Tokyo, Japan, assignors to Gakken Co., Ltd. Kabushiki Kaisha Gakushu Kenkyusha, Tokyo, Japan

Filed Jun. 10, 1976, Ser. No. 694,737

Claims priority, application Japan, Jun. 13, 1975, 50-70955

Int. Cl.[2] H02K *13/00*

U.S. Cl. 310—248 **17 Claims**



1. In an electric motor of the type wherein a commutator comprising a plurality of segments is fixedly mounted on a rotatable shaft within a casing having an end cap, with the commutator segments having surfaces arranged in a plane normal to the axis of the shaft, the improvement comprising:

(a) a plurality of brushes each integrally made of sheet metal, each said brush comprising:

(1) a first portion affixed at one point thereon to said end cap;

(2) a second portion connected at one end to said first portion and generally extending radially of said end cap past said first portion; and

(3) a contact formed on another end of said second portion, said second portion being angled with respect to said first portion whereby said contact is resiliently urged into sliding contact with the surfaces of said commutator segments;

(b) means on said end cap for engaging each said brush so as to lock same against angular displacement about said one point on said first portion thereof; and

(c) said second portion of each said brush having a notch-formed in said one end thereof for engagement by said engaging means on said end cap of said casing.

4,119,876

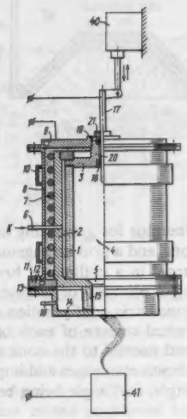
ELECTRODE STRUCTURE FOR AN ELECTRIC DISCHARGE DEVICE

Valentin Ostapovich German, ulitsa akademika Pavlova, 28, Moscow; Jury Pavlovich Kukota, ulitsa Kirova, 34a, kv. 22, Kiev; Grigory Alexandrovich Ljubimov, Rostovskaya naberezhnaya, 1, kv. 60, Moscow; Boris Vladimirovich Parfenov, Spiridonievsky pereulok, 12/9, kv. 6, Moscow; Alexandr Nikolaevich Popov, ulitsa marshala Timoshenko, 28, kv. 58, Moscow, and German Mikhailovich Schegolev, bulvar Likhacheva, 3, kv. 10, Kiev, all of U.S.S.R.

Filed Oct. 4, 1976, Ser. No. 729,265

Int. Cl.[2] H05H *1/00*

U.S. Cl. 313—231.4 **5 Claims**



1. An electrode structure for an electric discharge device, comprising: a discharge chamber serving as an electrode having an inner space filled completely with plasma in the course of operation and an inner surface for the transfer of electric current from said discharge chamber to said plasma under conditions of a distributed discharge; a current conductor positionable within said discharge chamber to supply said inner surface with electric current; means to provide a discharge channel outlet from said inner space of said discharge chamber; means to deliver a fluid containing actively emissive elements to said inner surface of said discharge chamber to provide distributed discharge conditions on said inner surface; means to maintain the temperature in said discharge chamber at a preset level for evaporating and ionizing the actively emissive elements in order to produce distributed discharge conditions; and means for primary initiation of a discharge.

4,119,877

ELECTRIC LAMP HAVING A CAP PLATE

Fränz Josef Grewe; Heinz Rösler; Oskar Rühl, all of Aachen; Klaus Stenke, Eschweiler, all of Fed. Rep. of Germany; Egidius Van Wersch, Voerendaal, Netherlands, and Leo Wings, Dürwiss, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

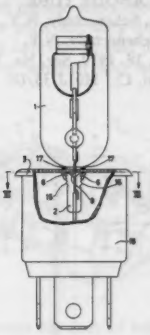
Filed Aug. 18, 1976, Ser. No. 715,515

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1975, 7526777[U]

Int. Cl.[2] H01J *5/48, 5/50*

U.S. Cl. 313—318 **10 Claims**

1. An automobile electric lamp which comprises: an envelope having a bulbous portion and a pinch which is rectangular in cross-section and which has first, second, third, and fourth sides, said first and third sides opposed, said second and fourth being opposed sides which are wider than said first and third sides, a filament disposed within said envelope and a metal cap plate having a rectangular recess having a lug stamped out of the plate disposed on each side of said recess, said cap plate being a resilient material and being coupled to each side of said pinch by the resilient engagement of said lugs, said lugs extending from said cap plate in a direction generally away from said bulbous portion.



4,119,878

SPARK GAP DEVICE FOR A CATHODE RAY TUBE SOCKET

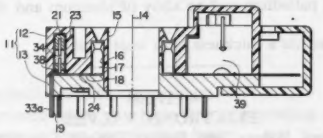
Masayuki Uda, Osaka, Japan, assignor to Hoshidenki-Seizo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1977, Ser. No. 805,481

Claims priority, application Japan, Jun. 18, 1976, 51/80043[U]

Int. Cl.[2] H01T *3/00*; H02H *9/06*

U.S. Cl. 313—325 **6 Claims**



1. A spark gap device for a cathode ray tube socket comprising:

a plurality of spark gap portions, each forming a spark gap between a pair of electrodes disposed close to each other;

a flexible coupling link for coupling one electrode of each spark gap portion;

a common terminal portion formed as a unitary structure with the coupling link;

electrode terminal portions extending from the other electrodes of the spark gap portions and to be connected with contacts of the cathode ray tube socket corresponding to the electrode terminal portions; and

a plurality of molding pieces, each formed as as unitary structure with each pair of electrodes to hold the spark gap at a predetermined value;

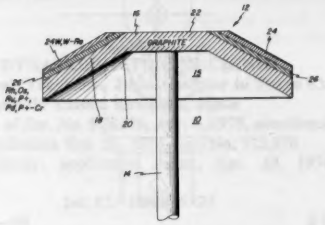
wherein the coupling link is adapted to be bendable so that the molding pieces may lie at predetermined positions in the cathode ray tube socket when the spark gap portions are incorporated in the cathode ray tube socket.

4,119,879

GRAPHITE DISC ASSEMBLY FOR A ROTATING X-RAY ANODE TUBE

Thomas M. Devine, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,130
Int. Cl.[2] H01J 35/08
U.S. Cl. 313—330 8 Claims



1. A disc for an anode assembly for a rotating x-ray anode tube comprising

a graphite substrate having two opposed major surfaces which are, respectively, the inner and outer surfaces of the substrate and an inner portion and an integral outer portion;

an anode target affixed to a predetermined surface area of the outer surface of the integral outer portion of the substrate wherein the material of the anode target is one selected from the group consisting of tungsten and a tungsten-rhenium alloy;

a layer of metal joining the anode target to the predetermined surface area of the outer surface of the integral outer portion of the substrate wherein the material of the layer of metal is one within which carbon is not soluble in the temperature range of from about 1000° C. to about 1300° C. but may have a solubility therein of from 1 to 4 atomic percent at the temperature of joining the anode target to the substrate;

the material of the layer of metal has some solubility in the material of the anode target;

the material of the layer of metal is one selected from the group consisting of rhodium, osmium, ruthenium, platinum, palladium and an alloy of platinum and chromium; and

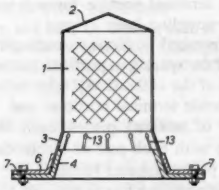
the layer has a thickness of at least ¾ mil.

4,119,880

ELECTRONIC VALVES

David Mark Wilcox, and Robert Edward Corkhill, both of Chelmsford, England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Jan. 21, 1977, Ser. No. 760,992
Claims priority, application United Kingdom, Jan. 29, 1976, 3636/76
Int. Cl.[2] H01J 1/46, 1/52, 17/04, 19/38
U.S. Cl. 313—348 14 Claims



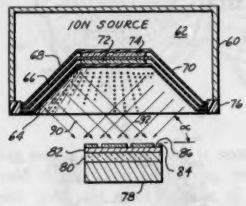
1. An electronic valve including at least one shell electrode wherein the base of said shell electrode is flared outwardly, a support therefor is tapered inwardly to accommodate said flare and a clamping member is provided to urge the flared base of said shell electrode onto the tapered portion of said support.

4,119,881

ION BEAM GENERATOR HAVING CONCENTRICALLY ARRANGED FRUSTOCONICAL ACCELERATING GRIDS

Arthur Calderon, Minnetonka, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Feb. 27, 1978, Ser. No. 881,273
Int. Cl.[2] H05H 5/02
U.S. Cl. 313—360 8 Claims



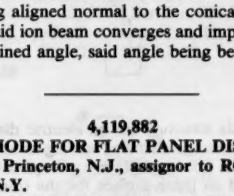
1. An ion beam generator for generating an ion beam comprising: a source of ions, and a grid arrangement for accelerating ions toward a target in a collimated beam, said grid arrangement comprising a plurality of individual frustoconical grids arranged in a concentric configuration and having apertures through the conical surface of each of said grids, said apertures being aligned normal to the conical surface of said grids so that said ion beam converges and impinges said target at a predetermined angle, said angle being between about 30° and 60°.

4,119,882

CATHODE FOR FLAT PANEL DISPLAY

Te Ning Chin, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 22, 1977, Ser. No. 770,510
Int. Cl.[2] H01J 1/94, 29/04
U.S. Cl. 313—411 7 Claims



1. In a display device having an evacuated envelope which includes substantially rectangular front and back walls secured together in spaced relation by side walls, support walls in the envelope between the front and back walls, a phosphor screen on the inner surface of the front wall and means along one of the side walls for generating electrons and directing the electrons as a plurality of beams across the front wall, said means including a thermionic emissive line cathode extending horizontally along one of said side walls, said support walls extending in spaced, parallel relation between the line cathode and the opposite side wall to provide a plurality of parallel channels, the improvement comprising,

said line cathode at least partially being supported by a plurality of supports at spaced points along and between the ends of said line cathode, said supports being rigid in a direction transverse to said line cathode but allowing relative movement between said line cathode and said supports in the longitudinal direction of said line cathode

and wherein said supports are each positioned at separate ones of said support walls.

4,119,883
CATHODE RAY TUBE

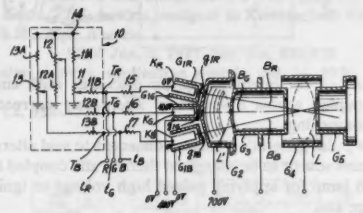
Senri Miyaoka, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 545,513, Jan. 30, 1975, abandoned, which is a continuation of Ser. No. 49,329, Jun. 24, 1970, abandoned. This application Aug. 1, 1975, Ser. No. 601,052

Claims priority, application Japan, Jun. 30, 1969, 44-51889

Int. Cl.[2] H01J *29/51*

U.S. Cl. 313—414 **11 Claims**



1. In combination, a cathode ray tube having a phosphor screen to reproduce color images, beam producing means for directing a plurality of electron beams to impinge on said screen and which are made to intersect each other at a point in said tube between said beam producing means and said screen and lens means common to all of said beams and including main focusing lens means positioned to dispose the optical center thereof substantially at said point where said beams intersect, at least a first and a second of said beams passing through said main focusing lens at substantially equal angles with respect to the optical axis of said lens, said angles being greater than the angle of a third of said beams with respect to the optical axis of said lens, said beam producing means comprising a plurality of individual cathodes to emit the respective electron beams, control grid means located adjacent said cathodes between said cathodes and said main focusing lens means, accelerating grid means located between said control grid means and said main focusing lens means, and brightness equalizing means to obtain color balance of the color images; and bias circuit means operative to establish different voltage potential differentials between said accelerating grid means and each of said cathodes corresponding to said first and second beams and said third beam, the voltage potential differential applied to said cathode corresponding to said third beam being substantially smaller than the voltage potential differentials applied to said cathodes corresponding to said first and second beams so that the beam velocity of said third beam is made substantially smaller than the respective beam velocities of said first and second beams in order to equalize focusing effects of said lens means on all of said beams.

4,119,884
UNITIZED ELECTRON GUN HAVING ELECTRODES WITH INTERNAL BEAM-SHIELDING TUBES

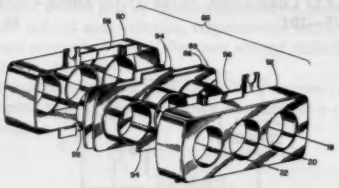
Horst H. Blumenberg, Elmwood Park, and Kenneth A. Guzowski, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation of Ser. No. 655,592, Feb. 5, 1976, abandoned. This application Sep. 16, 1977, Ser. No. 834,029

Int. Cl.[2] H01J *29/02, 29/82*

U.S. Cl. 313—417 **2 Claims**

1. A relatively axially long unitized electron gun electrode comprising a combination of two outside sheet metal parts and two inside sheet metal parts, said combination being axially arranged and conjoined to define three effectively continuous, electrically shielding beam-passing tubes extending completely through the electrode, each tube being formed by a contiguous axial succession of deep-drawn annular lips drawn integrally from said inside and outside sheet metal parts, wherein said lips on said outside parts are deep-drawn inwardly toward each other, wherein said lips on said inside sheet metal parts are also deep-drawn, wherein said inside parts are located



intermediately between the ends of said two outside parts to act as internal supportive members to resist deformation of said electrode when said electrode is physically stressed, and wherein said inside parts have lips that point outwardly, said lips on said inside parts being spaced from said lips on said outside parts by small gaps.

4,119,885
CATHODE RAY TUBE

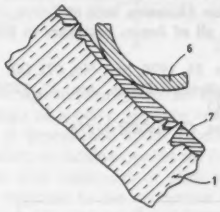
Johannes Hinderikus Stöver, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 646,039, Jan. 2, 1976, abandoned. This application May 6, 1977, Ser. No. 794,394

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1975, 2555765

Int. Cl.[2] H01J *31/00*

U.S. Cl. 313—479 **1 Claim**



1. A cathode ray tube comprising:

an evacuated glass envelope; beam generating means to generate at least one electron beam;

a display screen on a wall part of the envelope which constitutes the display window;

an electrically conductive layer on a wall part of the envelope between the said beam generating means and the display screen;

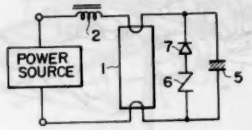
an electrode;

a contact spring electrically connected to said electrode and resiliently pressing against the conductive layer, the glass surface of the envelope below said conductive layer being relatively rough with a surface roughness of approximately **20** μm and comprising projections that extend through said conductive layer with the exception of a limited area where the contact spring presses against the conductive layer the glass surface in said limited area being relatively smooth with a surface roughness of less that **3** μm and being substantially completely devoid of projections extending through said conductive layer in said limited area the thickness of said conductive layer in said limited area being between **8** and **12** μm, whereby said contact spring electrically engages said conductive layer within said area.

4,119,886
PULSE GENERATOR

Shigeru Jyomura; Iwao Matsuyama, both of Hachioji; Katsuki Miyauchi, Hino; Tsune Miyashita, Tokyo, and Gyozo Toda, Hino, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 24, 1977, Ser. No. 762,130
Claims priority, application Japan, Feb. 6, 1976, 51/11476
Int. Cl.[2] C04B *35/46, 35/48, 35/00;* H05B *41/14*
U.S. Cl. 315—101 16 Claims

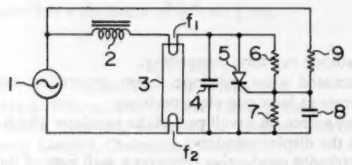


1. A pulse generator comprising (i) a condenser having a capacity which varies nonlinearly with voltage, such that current flow thereto may be abruptly cut off during some portion of a voltage cycle, whose dielectric material portion is made of ferroelectric ceramics represented by a general formula of ABO_3, wherein A is Pb and at least one of Ba and Sr, and B is selected from Zr or Zr and Ti, and the elements of A and the elements of B in ABO_3 are related by the formula $(Pb_{1-x-y}, Ba_x, Sr_y)(Ti_z, Zr_{1-z})O_3$, and (ii) an inductive element.

4,119,887
STARTER FOR DISCHARGE LAMP

Hiroyuki Iyama; Mitsuo Akatsuka, both of Tokyo, and Teruichi Tomura, Kunitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 31, 1976, Ser. No. 672,145
Claims priority, application Japan, Jun. 27, 1975, 50-79394; Oct. 6, 1975, 50-119742
Int. Cl.[2] H05B *41/18*
U.S. Cl. 315—101 9 Claims



1. A starter for a discharge lamp having first and second filaments, said starter comprising

a ballast transformer,

a unidirectional thyristor having a control electrode and current-in and current-out electrodes, said current-in electrode being connected in series through said first filament and said ballast transformer to one terminal of an AC power supply, and said current-out electrode being connected through said second filament to the other terminal of said AC power source,

a first resistor connected between said control electrode and said current-in electrode, and

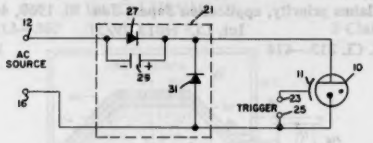
a second resistor connected between said control electrode and said one terminal of said AC power supply.

wherein a high voltage pulse is generated by said ballast transformer when said unidirectional thyristor is turned off.

4,119,888
OPERATING CIRCUIT FOR FLASH LAMP DIRECTLY COUPLED TO AC SOURCE

P. Bruce Newell, Carlise, and James C. Morris, Wakefield, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 15, 1977, Ser. No. 777,872
Int. Cl.[2] H05B *41/32*
U.S. Cl. 315—205 8 Claims



1. A circuit for operating an arc discharge flash lamp directly coupled across a source of alternating current, said circuit comprising:

trigger pulse generating means connected to said alternating current source to be energized thereby and coupled to said flash lamp for applying pulsed high voltage to ignite the lamp; and

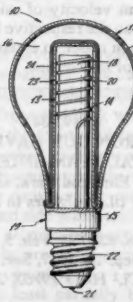
a voltage multiplier coupled across said flash lamp for increasing the voltage across the lamp above that provided by said alternating current source, thereby facilitating starting of the lamp by said trigger means;

said voltage multiplier comprising a first diode connected in series with said lamp, a capacitor connected across said first diode, and a second diode connected across said lamp, said first and second diodes having cathode terminals electrically connected together, said diodes and capacitor ceasing to function as a multiplier once the lamp is started, whereupon said first diode directly couples said lamp to said AC source and assures that said lamp, when ignited during a half cycle of predetermined polarity of the alternating current waveform of said source, is turned off when said waveform goes to the opposite polarity.

4,119,889
METHOD AND MEANS FOR IMPROVING THE EFFICIENCY OF LIGHT GENERATION BY AN ELECTRODELESS FLUORESCENT LAMP

Donald D. Hollister, 2031 Tweed St., Placentia, Calif. 92670

Continuation-in-part of Ser. No. 604,226, Aug. 13, 1975, Pat. No. 4,010,400. This application Feb. 14, 1977, Ser. No. 768,478
Int. Cl.[2] H05B *41/16, 41/24*
U.S. Cl. 315—248 8 Claims



1. In an elctrodeless fluorescent lamp of the type including a sealed, light transmissive, envelope including an elongate inner wall defining an open-ended cavity and an outer wall surrounding the inner wall forming a generally annular, hollow cavity

therebetween, said annular cavity being charged with an ionizable gaseous medium, an induction coil positioned within said open-ended cavity, and a radio frequency oscillator connected to said coil, said coil and said oscillator causing ionization of said medium to form an ultraviolet light emitting discharge, the inner surface of said outer wall of said envelope being coated with a phosphor which emits visible light when excited by ultraviolet light, the improvement wherein:

the surface of said inner wall in said annular cavity is coated with a layer of an electrically insulative, ultraviolet light reflective material.

4,119,890

METHOD AND EQUIPMENT FOR MEASURING THE DISTANCE BETWEEN TWO POINTS

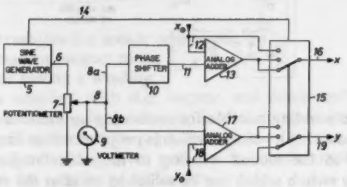
Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Jun. 6, 1977, Ser. No. 803,579

Claims priority, application Austria, Jul. 14, 1976, 5191/76

Int. Cl.² G01R *13/30*

U.S. Cl. 315—377 **15 Claims**



1. Equipment for measuring the distance between first and second points, comprising

a fluorescent screen,

first display control means for generating displays of said first and second points on said fluorescent screen, and

second display control means for displaying on said fluorescent screen a first mark, which coincides with the display of said first point, for displaying on said fluorescent screen a linear second mark, and for varying in a controlled manner a parameter which controls the position of said second mark on said fluorescent screen to move said second mark to a plurality of positions, in each of which said second mark constitutes a display of a circle which is centered on said first point, inclusive of one position in which said second mark is in close proximity to the display of said second point, said parameter having a predetermined, known relation to the radius of said circle so that the value of said parameter is a measure of the distance between said first and second points when said second mark is in said one position and said first mark coincides with the display of said first point,

said second display control means comprising

first and second deflecting voltage inputs adapted to receive respective deflecting voltages for controlling the display on said screen,

a generator for generating a sine wave voltage,

sine voltage control means for varying said sine voltage,

a quadrature phase shifter arranged to receive said sine wave voltage and to convert it into a cosine wave voltage,

a first d.c. voltage source for delivering a first d.c. output voltage,

a second d.c. voltage source for delivering a second d.c. output voltage,

each of said d.c. voltage sources being adjustable to vary its output voltage independently of the output voltage of the other d.c. voltage source,

a first analog connected to said generator and to said first d.c. voltage source and adapted to deliver a first sum voltage which equals the sum of said sine wave voltage and said first d.c. voltage,

a second analog adder connected to said phase shifter and to said second d.c. voltage source and adapted to deliver a second sum voltage which equals the sum of said cosine wave voltage and said second d.c. voltage, and

a sequential switch having a first pair of inputs connected to receive said first d.c. voltage and said second sum voltage, respectively, a second pair of inputs connected to receive said second d.c. voltage and said first sum voltage, respectively, a third pair of inputs connected to receive said first and second sum voltages, respectively, and a pair of outputs connected to said first and second deflecting voltage inputs, respectively,

said sequential switch being operable to connect said pairs of inputs in a cyclical sequence to respective ones of said outputs.

4,119,891

OSCILLOSCOPE FOR THE IMAGE DISPLAY OF SECTIONAL PLANES OF A BODY

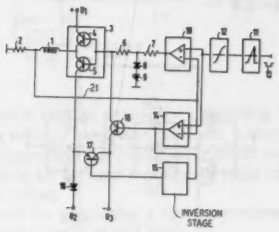
Richard Soldner, Erlangen, and Rudolf Rattmann, Herzogenaurach, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 26, 1976, Ser. No. 745,228

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557528

Int. Cl.² H01J *29/70*

U.S. Cl. 315—389 **16 Claims**



1. In an image display system for the image-display of sectional regions of a body, wherein control impulses (13) are produced in dependence upon respective transmitted ultrasonic impulses, an oscilloscope for the formation of an image in accordance with sequences of ultrasonic echo impulses received in response to the successive transmitted ultrasonic impulses during linear scanning of the region, comprising a line sweep deflection system including coil means (1) for producing a magnetic deflection field controlling each line trace operation in generating the image, each active line trace interval of the line trace operation being triggered by one of the control impulses (13), and a transistor output stage (3) connected with the coil means (1) for the purpose of controlling current flow therein, characterized by the combination of:

(a) circuit means (10, 14, 15, 16, 17, 18) connected to said output stage (3) for controlling current flow in said coil means (1); said circuit means comprising differental amplifier means (10, 14); said differential amplifier means (10, 14) having feedback means (2) connected therewith for supplying a feedback voltage thereto which is strictly proportional to coil current (I_H) in said coil means (1);

(b) said circuit means including a switching circuit (16, 17) having an overvoltage input for supplying an overvoltage input value (U_3) and operable for connecting the overvoltage input value (U_3) to the coil means (1) for the purpose of providing a flyback interval of each line trace operation, of reduced duration;

(c) a horizontal time base generator (11, 12) connected with said differential amplifier means (10, 14) for controlling said differential amplifier means to produce a tangential-distortion-corrected line sweep voltage; said horizontal time base generator (11, 12) comprising a triggerable

sweep voltage generator (11) having a line sweep cycle which is triggered by a control impulse (13) and which generatess a voltage waveform which is not corrected for tangential distortion during each line sweep cycle; and comprising a voltage dependent resistance (VDR) circuit (12) operated by the voltage waveform from the triggerable sweep voltage generator (11) and providing tangential distortion correction in conjunction with the voltage waveform from the triggerable sweep voltage generator (11); and

(d) said circuit means having an operating voltage input for supplying an operating voltage (U_2) to said transistor output stage (3) which is substantially less said overvoltage input value (U_3) during part of each line trace operation; and

(e) said differential amplifier means being responsive to a feedback voltage from the feedback means (2) during the flyback interval of each line trace operation for activating said switching circuit (16, 17) to connect said overvoltage input value (U_3) to said coil means (1).

4,119,892

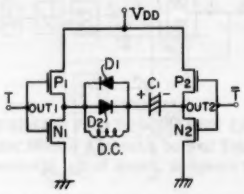
LIGHT EMITTING INDICATING CIRCUIT FOR A TIMEPIECE

Takeo Saito, and Takashi Segawa, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Nov. 11, 1976, Ser. No. 741,121

Int. Cl.² G04C *3/00*

U.S. Cl. 318—138 **8 Claims**



3. In an electric timepiece; a motor driving coil and a capacitor connected in series; driving means connected for applying repetitive complementary electrical driving signals to opposite sides of the series combination of said motor driving coil and said capacitor to repetitively flow current in alternating directions through the series combination of said motor driving coil and said capacitor to repetitively energize said motor driving coil; and indicating means responsive to the electrical driving signals for indicating energization of said motor driving coil.

4,119,893

CIRCUIT FOR FORMING AN ELECTRICAL QUANTITY WHICH IS PROPORTIONAL TO A FLUX COMPONENT IN A ROTATING FIELD MACHINE

Karlheinz Bayer; Walter Dreiseitl, and Felix Blaschke, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

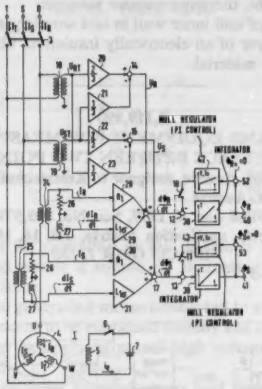
Filed Jul. 25, 1977, Ser. No. 818,854

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1976, 2635965

Int. Cl.² H02P *7/36*

U.S. Cl. 318—178 **4 Claims**

1. In a circuit for forming an electrical quantity which is proportional to a flux component of a rotating field machine, wherein the rotating field machine has a first winding provided for excitation, the circuit comprising an adder, to which are fed a voltage proportional to the phase current in a machine lead, a voltage porportional to the differential coefficient of the phase current with respect to time and a voltage proportional to the corresponding phase voltage; and an integrator which follows the adder and at the output of which the quantity proportional to the flux component is taken off; and a null regulator with PI characteristics designed to suppress the d-c component of this quantity, the input of which is connected to the output of the integrator and the output of which is connected to a summing junction at the input of the integrator, the improvement comprising the rotating field machine also having



a second winding suitable for measuring an induced voltage, means coupling a voltage which is proportional to the voltage induced in the second winding to the adder stage; and an auxiliary switch which can be switched on after the excitation process in the rotating field machine is completed coupling the output of the null regulator to the summing junction.

4,119,894

SINGLE PHASE ASYNCHRONOUS MOTOR

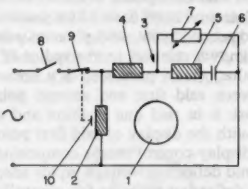
Per Germann Sorensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jun. 21, 1977, Ser. No. 808,654

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1976, 2627835

Int. Cl.² H02P *1/44*

U.S. Cl. 318—221 D **1 Claim**

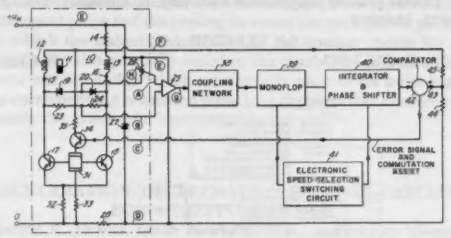


1. A single phase asynchronous motor comprising a main winding branch having a main winding, an auxiliary winding branch having first and second winding sections, and first section having a first winding, said second section having a second winding and a capacitor in series, a PTC resistor in said second section shunting said second winding and said capacitor, a suitable starting torque being obtained by said first section having a predetermined ohmic resistance and said PTC having a cold starting resistance of the same order of magnitude as said ohmic resistance, and a suitable breakdown torque being obtained by said second winding having a substantially smaller cross sectional area than said first winding to provide a substantially higher resistance during operation when said PTC resistor exhibits a substantially higher resistance in its heated state.

4,119,895
BRUSHLESS D.C. MOTOR WITH PRECISE SPEED CONTROL

Rolf Müller, St. Georgen, Germany, assignor to Papst-Motoren KG, St. Georgen, Germany

Filed Apr. 7, 1977, Ser. No. 785,725
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1976, 2616044
Int. Cl.² H02K *29/00*
U.S. Cl. 318—254 **13 Claims**

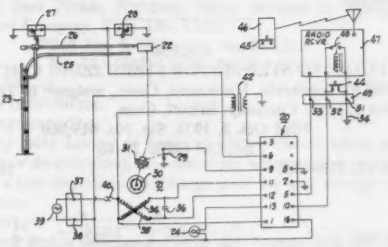


1. A brushless d.c. motor comprising
a permanent magnet rotor;
a stator having a winding;
means supplied with d.c. current and connected to said stator winding for producing an alternating magnetic field in said stator and having a speed control circuit;
means for deriving, from said motor, signals synchronized with the rotation of said rotor;
means for generating pulses of a predetermined length;
means for triggering the generation of said pulses by said pulse generating means in response to said signals;
analog circuit means for phase-shifting and smoothing said pulses
for deriving from said pulses a smoothed voltage having a d.c. component and a superimposed a.c. component, and
means for feeding said smoothed voltage to said speed control circuit for controlling the speed of said motor by said d.c. component of said voltage while the a.c. component serves to control the armature current and torque cycles as the motor turns.

4,119,896
SEQUENCING CONTROL CIRCUIT

Bay E. Estes, III, Murrysville, and Richard A. Nedbal, Pittsburgh, both of Pa., assignors to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed May 28, 1976, Ser. No. 690,984
Int. Cl.² H02P *1/26*
U.S. Cl. 318—266 **13 Claims**

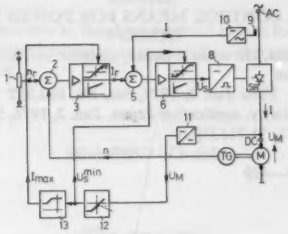


1. A sequencing control circuit for a single phase door operator motor operable to open and close a garage door as controlled by signals from manual switch means and load switch means,
said sequencing control circuit comprising, in combination,
output load sensing means connected to actuate the load switch means,
input means connecting said switch means to control energization of the single phase motor,
time delay means having a first time delay period,
and enabling means connecting said time delay means to said motor energization control means so that said time delay means enables control of the motor by a signal from said load switch means.

4,119,897
STATIC CONVERTOR

Hans Skoog, Vasteras, Sweden, assignor to ASEA AB, Vasteras, Sweden

Filed Sep. 9, 1976, Ser. No. 721,995
Claims priority, application Sweden, Sep. 24, 1975, 7510689
Int. Cl.² H02P *5/00*
U.S. Cl. 318—331 **5 Claims**



1. A convertor control device for controlling a rotational load having a variable electromotive force, comprising:
means for controlling the continuous current direct voltage of the convertor between a maximum value and a variable minimum value;
sensing means for generating a signal corresponding to the electromotive force of said load;
first function generator means for controlling said variable minimum value in accordance with said signal;
means for generating a control signal representative of the difference between the direct current of the convertor and a current reference signal; and
said means for controlling including a first regulator means responsive to said control signal and said first function generator means for controlling said direct voltage.

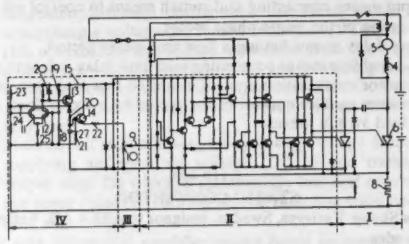
4,119,898
PULSE CONTROLLERS

John Morton, and Keith Drummond Stevens, both of Stockport, England, assignors to Cableform Limited, Stockport, England

Filed Dec. 22, 1976, Ser. No. 753,137
Claims priority, application United Kingdom, Dec. 24, 1975, 52782/75
Int. Cl.² H02P *5/00*
U.S. Cl. 318—341 **6 Claims**

1. A control circuit for controlling the energization of a series electric motor from a D.C. source, comprising:
a semi-conductor switching element connected in series with the motor,
a pulse generator circuit for applying a train of pulses to the semi-conductor switching element such that the switching element is turned on and off and thereby applies D.C. pulses to the motor,
means for controlling the pulse generator circuit to determine the mark/space ratio of the D.C. pulses applied to the motor.
means for sensing the current through the motor, and
means for adjustably setting and applying the maximum mark/space ratio such that when the motor current is

below a predetermined limit the maximum mark/space ratio is proportional to motor current and when the motor



current is above the predetermined limit the maximum mark/space ratio is independent of motor current.

4,119,899

MOTOR CONTROL MEANS FOR POWER DRIVEN WINDOW

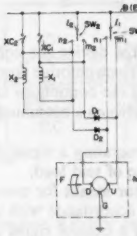
Shizuo Sumida, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Jun. 1, 1977, Ser. No. 802,582

Claims priority, application Japan, Jun. 2, 1976, 51-71903[U]; Jun. 11, 1976, 51-76539[U]

Int. Cl.² G05B *1/00*

U.S. Cl. 318—459 **6 Claims**



1. Motor control means for power driven window comprising reversible D.C. motor means adapted to be connected to a D.C. power source for driving window glass, said motor means having first and second brush means and third brush means connected to ground; an operation switch device having first switch means for selectively connecting the D.C. power source to one of said first and second brush means of said motor means and a second switch means for completing a current path between the D.C. power source and one of said first and second brush means and bypassing said first switch means, said first switch means being adapted to be closed when said switch device is moved to a first operation position and when said switch device is moved to a second operation position and said second switch means being adapted to be closed only when said switch device is moved to the second operation position; and solenoid means adapted to be energized by a counter electromotive voltage induced between said first and second brush means of said motor means during rotation of said motor means for holding said first and second switch means in the condition in which they were at the moment the solenoid is energized, said first switch means being connected between said power source and said motor, and said second switch means being connected to complete, when closed, an energizing circuit for said solenoid means by the counter electromotive voltage, whereby said first and second switch means are maintained in the second operation condition and whereby, when said motor is stopped said solenoid is deenergized to allow said first and second switch means to return to an open condition to thereby deenergize said motor means.

4,119,900

METHOD AND SYSTEM FOR THE AUTOMATIC ORIENTATION AND CONTROL OF A ROBOT

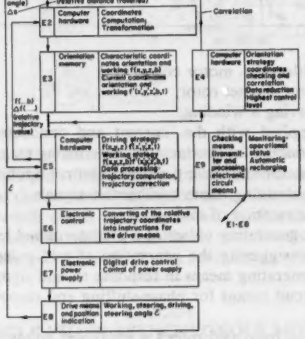
Walter Kremnitz, Eberbach, Neckar, Fed. Rep. of Germany, assignor to ITO Patent-AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 534,080, Dec. 18, 1974, abandoned. This application Jun. 16, 1976, Ser. No. 696,525

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1973, 2364002

Int. Cl.² G05D *1/00*

U.S. Cl. 318—587 **39 Claims**



1. A method for automatically orienting and controlling a robot system in a space for performing work on a defined surface in said space as a result of said orientation, said robot system travelling on said surface, comprising measuring scalar values on all sides of the system representing said surface or space, supplying said scalar values to data processing means including mathematical models and performing mathematical transformations to produce characteristic data for said surface or space which characteristic data geometrically define said surface or space, to provide a basis for said orienting, processing said characteristic data with the aid of a mathematical optimization model to form operation instructions for said robot system, said operation instructions comprising a sequence of steps for moving and working, and supplying said operation instructions to said robot system, said scalar values being ascertained predominantly during the orientation and/or working.

4,119,901

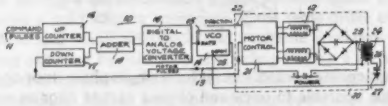
PULSE TO STEP MOTOR STABILIZING CIRCUIT

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Oct. 3, 1975, Ser. No. 619,360

Int. Cl.² G05B *19/40*

U.S. Cl. 318—685 **19 Claims**



1. A pulse to step motor stabilizing circuit comprising means

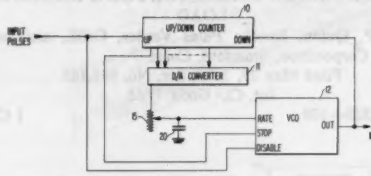
for receiving command pulses with the pulses appearing as a set number of essentially evenly-spaced pulses in consecutive equal length time intervals, oscillator means for producing a motor pulse for each command pulse, motor means for receiving the motor pulses and producing a step for each motor pulse, summing means for providing an instantaneous count of the difference between the number of command pulses and the number of motor pulses and means for causing the oscillator to produce motor pulses at a rate that is essentially equal to the instantaneous count for a time interval, in which the summing means includes counter means for increasing its count for each command pulse and decreasing its count for each motor pulse, in which the instantaneous count of the counter means for a time interval is generally equal to the number of pulses in the prior interval and in which substantially each motor pulse lags its corresponding command pulse by a duration that essentially equals the extent of a time interval.

4,119,902

ACCELERATION/DECELERATION CONTROL CIRCUIT FOR A STEPPING MOTOR

Harold R. Newell, South Newbury, N.H., assignor to Mesur-Matic Electronics Corp., Salem, Mass.

Filed Jul. 8, 1977, Ser. No. 814,072
Int. Cl.² H03K *1/16*
U.S. Cl. 318—696 **5 Claims**



1. An improved acceleration control for a stepping motor which includes a source of pulses of constant frequency, a plural stage up/down counter with one input for stepping said counter is one direction connected to said source of pulses, decoding means connected to plural stage outputs of said counter for providing a voltage corresponding to a count stored in said counter, a variable frequency oscillator responsive to said voltage for providing pulses at a rate related to said voltage, said variable frequency oscillator having an output supplying pulses to said stepping motor, said output also connected to a further input of said plural stage up/down counter for stepping said counter in another direction wherein the improvement comprises integrating means connected between said decoder means and said variable frequency oscillator.

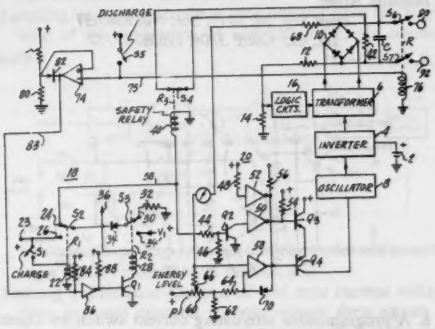
4,119,903

DEFIBRILLATOR CHARGING CIRCUIT

Sherman Jack Pirkle, Waltham, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 5, 1978, Ser. No. 867,263
Int. Cl.² H02M *9/04*; A61N *1/38*
U.S. Cl. 320—1 **1 Claim**

1. In a defibrillator,
a storage capacitor,
a safety relay having an armature that is closed when said relay is de-energized, said armature, when closed, providing a low impedance discharge path for said storage capacitor,
a battery,
charging means coupled between said battery and said capacitor for charging said capacitor when said means is energized, said means being normally de-energized,
a charge switch having one side connected to one side of said battery,
means coupled between the other side of said switch for energizing said safety relay when said switch is closed so as to open its armature and remove the discharge path from said storage capacitor, and



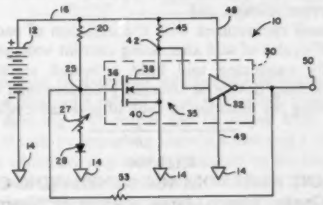
means responsive to the closure of said switch for energizing said charging means so as to cause it to charge said storage capacitor.

4,119,904

LOW BATTERY VOLTAGE DETECTOR

Stephen A. Haglund, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 11, 1977, Ser. No. 786,522
Int. Cl.² H02J *7/00*; H03K *3/26*
U.S. Cl. 320—48 **10 Claims**



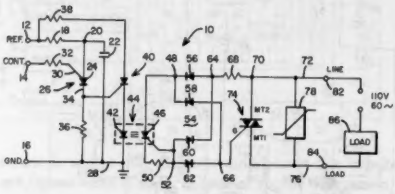
1. Apparatus for detecting a low voltage condition in a battery comprising:
a MOSFET having a gate, a source and a drain;
an inverter having an input and an output;
first means for connecting the gate of the MOSFET to one terminal of the battery;
second means for connecting the source of the MOSFET to the other terminal of the battery;
third means for connecting the drain of the MOSFET to the one terminal of the battery and to the input of the inverter; and
feedback means for connecting the output of the inverter to the gate of the MOSFET: a predetermined low voltage condition in the battery causing a decrease in voltage at the gate of the MOSFET, when this voltage becomes below the threshold voltage of the MOSFET, the MOSFET starts to turn off thus producing an increased voltage at the input of the inverter and a decreased voltage at the output of the inverter which is fed back to further decrease the voltage and cause rapid shut off of the MOSFET and producing an indication of the low voltage condition in the battery.

4,119,905

PROGRAMMABLE ALTERNATING CURRENT SWITCH

Dale R. Head, Savage, Minn., assignor to Precision, Inc., Minneapolis, Minn.

Filed Sep. 30, 1977, Ser. No. 838,057
Int. Cl.[2] G05F 3/04; H03K 17/72
U.S. Cl. 323—21 **8 Claims**



6. A programmable alternating current switch for controlling the average power delivered from an alternating current voltage source to a load during each half-cycle of said alternating current voltage, comprising:

(a) means including a bidirectional, triggerable semiconductor switch connected in series circuit between said source and said load; and

(b) a triggering circuit operatively connected to said triggerable semiconductor switch, said triggering circuit including,

1. a diode bridge circuit adapted to be coupled between alternating current voltage source and said triggerable semiconductor switch;

2. a light activated semiconductor switching device operatively connected to said diode bridge for blocking the flow of current therethrough when said light activated semiconductor switching device is in a non-conducting condition and for allowing the flow of current therethrough when said light activated semiconductor switching device is in a conducting condition, irrespective of the instantaneous polarity of said alternating current voltage, and

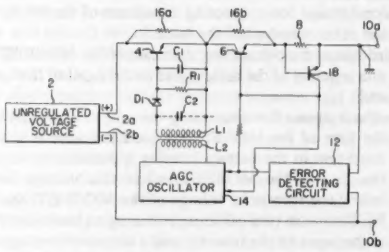
3. means sychronized with the initiation of each of said half-cycles of said alternating current voltage for optically energizing said light activated semiconductor switching device at selected predetermined times following the initiation of each of said half-cycles.

4,119,906

CONSTANT HIGH VOLTAGE GENERATING CIRCUIT

Tsunemi Gonda, Yamato, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 7, 1977, Ser. No. 775,109
Claims priority, application Japan, Mar. 6, 1976, 51-23721
Int. Cl.[2] G05F 1/58
U.S. Cl. 323—22 T **7 Claims**



1. A constant high voltage generating circuit for converting the high voltage output between output terminals of an unregulated voltage source into a constant output voltage between output terminals of the constant high voltage generating circuit comprising:

an error detecting circuit for detecting any error of the output voltage of said constant high voltage generating circuit relative to a predetermined constant output voltage and producing an output that varies in response to said error;

a high frequency wave generating circuit connected to said error detecting circuit for radiating a high frequency wave that varies in accordance with the varying output of said error detecting circuit;

a receiving circuit for receiving said high frequency wave;

a rectifying and smoothing circuit connected to said receiving circuit for producing in response to the received high frequency wave a rectified and smoothed control voltage that varies in accordance with said error; and

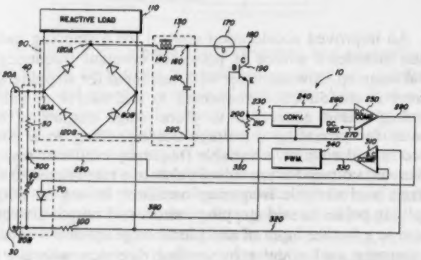
a regulating circuit providing a variable resistance path between an output terminal of said unregulated voltage source and an output terminal of said constant high voltage generating circuit, said regulating circuit having a control terminal to which said control voltage is applied and having means for varying the resistance of said path in response to the control voltage at said control terminal, thereby to regulate the high voltage output of said unregulated voltage source.

4,119,907

POWER FACTOR CORRECTOR FOR A RESISTIVE LOAD

Halsey P. Quinn, Rancho Palos Verdes, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 27, 1977, Ser. No. 801,183
Int. Cl.[2] G05F 1/68
U.S. Cl. 323—105 **1 Claim**



1. A correcting circuit for compensating the power factor of a signal due to reactive loading comprising:

(a) alternating current rectification means having an input side and an output side, said input side of said rectification means receiving an alternating current signal whereby said rectification means produces at its output side a unidirectional power signal;

(b) a resistive input circuit connected across said input side of said rectification means;

(c) a resistive load coupled to said output side of said rectification means for receiving said unidirectional power signal;

(d) first comparator means coupled to said resistive load for comparing the amplitude of the signal through said resistive load with a reference signal and for generating a first control signal having an amplitude indicative of any difference between the amplitude of said signal through said resistive load and said reference signal;

(e) means coupled to said first comparator means and operatively associated with said resistive input circuit for changing the resistance of said resistive input circuit as a function of the amplitude of said first control signal;

(f) second comparator means coupled to said input side of said alternating current rectification means and coupled to

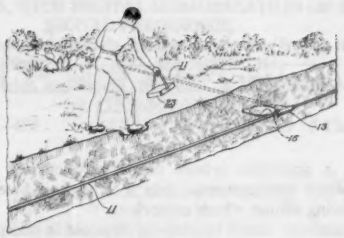
a point of said resistive input circuit for generating a second control signal indicative of the difference between the alternating current signal supplied thereto from said input side of said alternating current rectification means and the alternating current signal supplied thereto from said point of said resistive input circuit; and

(g) means coupled to said second comparator means and to said resistive load for regulating the magnitude of said unidirectional power signal through said resistive load to thereby provide power factor correction.

4,119,908
METHOD FOR LOCATING BURIED MARKERS WHICH ARE DISPOSED ALONG THE PATH OF AN UNDERGROUND CONDUCTOR

Armond D. Cosman, Liberty Hill, and Gary H. Knippelmier, Round Rock, both of Tex., assignors to A. P. C. Industries, Inc., Austin, Tex.

Continuation of Ser. No. 636,071, Nov. 28, 1975, abandoned.
This application Aug. 24, 1977, Ser. No. 827,277
Int. Cl.[2] G01V *3/08, 33/02*
U.S. Cl. 324—3 **6 Claims**



1. A method for determining locations along the path of an underground conductor where reaccess is desired, comprising:

a. positioning each of a plurality of passive marker elements at a respective location along said underground conductor where reaccess is desired, each of said elements being an inductor-capacitor combination tuned to be resonant to a selected frequency and being disposed at a respective location adjacent and alongside said underground conductor with its central axis generally vertical;

b. coupling a transmitter capable of generating an output signal having said selected frequency to said underground conductor;

c. moving a receiver, having an antenna loop and capable of receiving said selected frequency and communicating to an operator the strength of the received signal, along the underground conductor and swinging the receiver laterally of same to obtain a peak-null-peak signal as an indication that the operator is on the conductor path, and determining the approach of a passive marker element by reception of a signal in the region where there would otherwise be a null.

4,119,909
PULSED DC TRANSIENT CONDUCTIVITY MEASUREMENT SYSTEM

David W. DeBerry, Austin, Tex., assignor to Radian Corporation, Austin, Tex.

Filed Mar. 31, 1977, Ser. No. 783,463
Int. Cl.[2] G01N *27/42*
U.S. Cl. 324—30 R **12 Claims**

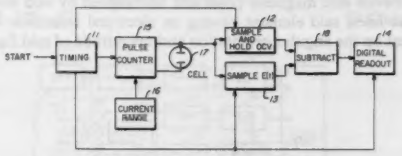
1. A method of measuring representations of the electrical conductivity of a fluid solution, comprising the steps of:

locating a sample of fluid to be measured between a pair of measurement electrodes;

sampling the zero current voltage drop between said measurement electrodes, generating a signal representative thereof and storing said representative signal;

applying a very fast rise time DC constant current pulse to said measurement electrodes;

sampling, at a predetermined time interval from the beginning of the application of said DC pulse, the constant



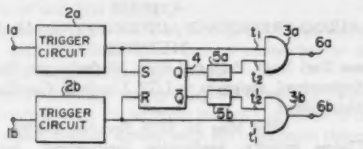
current voltage drop between said electrodes and generating a signal representative thereof; and

forming a difference function of said zero current voltage drop and said constant current voltage drop signals to generate a measurement signal representative of the electrical conductivity of a fluid to be measured.

4,119,910
METHOD AND APPARATUS FOR DETECTING WHETHER PHASE DIFFERENCE BETWEEN TWO SIGNALS IS CONSTANT

Kiyoshi Hayashi, Nagoya, Japan, assignor to Shin Shirasuna Electric Corp., Nagoya, Japan

Filed Mar. 14, 1977, Ser. No. 777,508
Claims priority, application Japan, Mar. 18, 1976, 51-29515
Int. Cl.[2] G01R *25/00*
U.S. Cl. 324—83 R **2 Claims**



1. A method of detecting whether the difference in phase between a first and a second signal is constant, comprising the steps of deriving a Q output and $\overline{Q}$ output from a set-reset flip-flop circuit by imparting thereto a first and a second trigger pulse which are respectively obtained on the basis of a first and a second signal to be compared with each other in respect of their phase difference; producing, on the basis of said Q and $\overline{Q}$ outputs, two pulse signals the fall portions of which correspond to the fall portions of said Q and $\overline{Q}$ outputs respectively but the rise portions of which are caused to occur while being delayed by a period of time corresponding to the duration of said trigger pulses; and producing logical products of said two pulse signals with respect to said first and second trigger pulses, whereby it is detected whether the phase difference between said first and second signals is constant or not, according to whether the outputs of said logical products are present or not.

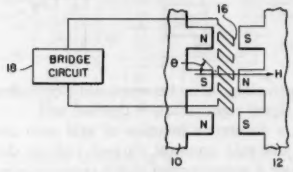
4,119,911
MAGNETORESISTOR DISPLACEMENT SENSOR USING A MAGNETORESISTOR POSITIONED BETWEEN RELATIVELY MOVING MAGNETIZED TOOTHED MEMBERS

Clark E. Johnson, Jr., 60 Pinecroft Rd., Weston, Mass. 02193

Filed Apr. 22, 1977, Ser. No. 789,790
Int. Cl.[2] G01R *33/12*
U.S. Cl. 324—208 **10 Claims**

1. A displacement transducer comprising: two toothed members each having magnetic poles arranged in alternating se-

quence in a predetermined direction; said toothed members being displaceable relative to each other and cooperating so that one magnetic pole on one of said members is spaced from a magnetic pole of opposite polarity on the other member; said magnetic poles being spaced so that magnetic flux lines pass through the space between poles of opposite polarity; at least one element of magneto-resistive material within the space between said magnetic poles and intercepted by said magnetic flux lines, said element having an electrical resistance dependent on the angular orientation and magnitude of said flux lines



with respect to said element; said element of magneto-resistive material within said space being stationary and free of contact with both said toothed members, said toothed members being unconnected and spaced from each other to form a gap therebetween, said element being located in said gap independent of the relative positions of said toothed members; and means connected to said element for measuring the electrical resistance thereof, said angular orientation varying with the relative displacement of said toothed members, whereby the measured resistance of said element is dependent on the relative displacement of said toothed members.

4,119,912

AUDIO FREQUENCY HETERODYNE MEANS AND METHOD

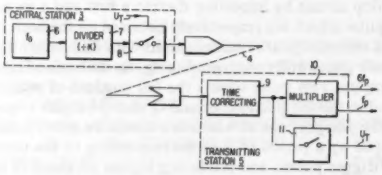
Janos Turi Nagy, Zug, and Felix Niederberger, Cham, both of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed May 26, 1976, Ser. No. 690,098

Claims priority, application Switzerland, Jun. 5, 1975, 7239/75

Int. Cl.² H03B *3/08*

U.S. Cl. 325—58 **9 Claims**



1. An apparatus for providing a specific one of a possible plurality of synchronous, in-phase audio-frequency pilot signals to a common power mains network at a plurality of ripple control transmitting stations and for transmitting gating pulses comprising:

a central station for providing a control signal including a sequence of pulses with a frequency which is a subharmonic of a specific one of a possible plurality of synchronous in-phase audio-frequency pilot signals including:

a high frequency, crystal controlled oscillator, a frequency divider for reducing the frequency of the output signal of the oscillator to the subharmonic frequency, and

means for modulating the output signal of the frequency divider responsive to said gating pulses; and,

a plurality of ripple control transmitting stations, feeding the common power mains network and receiving the control signal from the central station, each of which transmitting stations including:

means for equalizing the transit time of the control signal to each transmitting station,

a multiplier circuit operatively connected to said transit time equalizing means for multiplying the frequency fo the subharmonic signal to generate the pilot signal fed to the network, including a phase-locked-loop circuit, and

a demodulator operatively connected to said multiplier circuit for separating said gating pulses from the control signal.

4,119,913

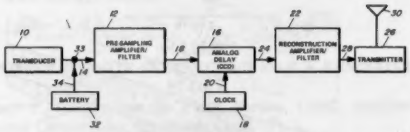
PROJECTILE IN-BORE MEMORY SYSTEM

David N. Everswick, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 20, 1977, Ser. No. 817,304

Int. Cl.² H04B *1/02*

U.S. Cl. 325—113 **4 Claims**



1. A projectile in-bore memory system for transmitting telemetry environmental data to a ground based telemetry receiving station which comprises:

transducer means operatively disposed in said projectile for sensing in-bore stress environment on said projectile and for generating a transducer output voltage signal in response thereto;

pre-sampling amplifier/filter means having an input electrically coupled to said transducer means for amplifying said transducer output voltage signals of interest and for filtering out unwanted high frequency components contained in said transducer output voltage signal and noise signals generated by said transducer means;

analog delay means electrically coupled to the output of said pre-sampling amplifier filter means for generating and storing discrete analog pulses in response to the output from said pre-sampling amplifier filter means, said analog delay means including means for delaying the generation of the analog pulses for a time "Y";

reconstruction amplifier/filter means electrically coupled to the output of said analog delay means for amplifying and reconstructing said transducer output voltage signal; and

transmitter means electrically coupled to the output of said reconstruction amplifier/filter means for generating an electromagnetic signal in response thereto after said time delay "Y", said signal having sufficient amplitude to be detected by said ground based telemetry receiving station.

4,119,914

DOUBLE BALANCED MIXER USING SINGLE FERRITE CORE

John D. Duncan, Bozeman, Mont., assignor to Dana Corporation, Toledo, Ohio

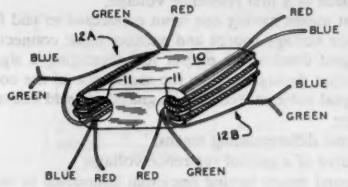
Division of Ser. No. 635,820, Nov. 28, 1975, Pat. No. 4,052,785. This application May 18, 1977, Ser. No. 798,216

Int. Cl.² H04B *1/26*; H01F *39/00*

U.S. Cl. 325—446 **8 Claims**

1. A transformer assembly comprising a single core of a magnetic material, said core defining two spaced apertures therein, and two sets of transformer windings, only one set in

each of said apertures, wherein one winding of each set emerging from one end of each aperture is interconnected with



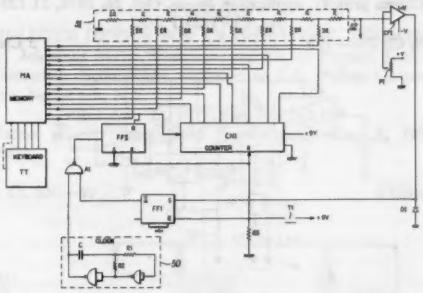
another winding of the same set emerging from another end of the same aperture.

4,119,915

ELECTRONIC TUNING SYSTEM FOR RADIO RECEIVERS, WITH DIGITAL MEMORIZATION OF THE SIGNAL FREQUENCY

Ciro Maddaloni, Rome, Italy, assignor to Voxson S.p.A., Italy

Filed Feb. 24, 1977, Ser. No. 771,586
Claims priority, application Italy, Mar. 9, 1976, 48484 A/76
Int. Cl.[2] H04B *1/06*
U.S. Cl. 325—452 **5 Claims**



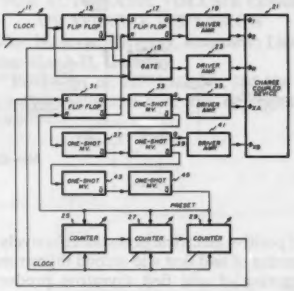
1. A circuit for generating and digitally storing control voltage signals for application to electronic tuning circuitry of an electronically tuned radio receiver comprising manual control means for generating a first control voltage; a clock pulse generator; counter means for counting clock pulses from said clock pulse generator; a digital-to-analog converter coupled to said counter means and adapted to supply a second control voltage, indicative of the number of clock pulses counted by said counter means, to electronic tuning circuitry of an electronically tuned radio receiver; a voltage comparator having a first input, a second input, and an output; the output from said converter being connected to the first input of said voltage comparator; the second input of said voltage comparator being connected to said manual control means; a gate circuit coupling said clock pulse generator to said counter means; the output from said voltage comparator being connected to said gate circuit to discontinue the supply of said clock pulses to said counter means when the second control voltage is substantially equal to the first control voltage; and digital memory means coupled to the outputs from said counter means and to the inputs of said digital-to-analog converter and arranged to digitally store clock pulse count signals corresponding to control voltages associated with tuning frequencies of selected radio broadcasting stations.

4,119,916

PROGRAMMABLE CHARGE COUPLED DEVICE TIMING SYSTEM

Herbert Berke, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1977, Ser. No. 798,289
Int. Cl.[2] H03K *5/15*
U.S. Cl. 328—62 **17 Claims**



1. Means for generating a plurality of timing signals, comprising in combination:

a clock signal generator;

a first flipflop having an input, a Q output, and a $\overline{Q}$ output, with the input thereof connected to the output of said clock signal generator;

a second flipflop having a set input, a reset input, a Q output, and a $\overline{Q}$ output, with the set input thereof connected to the Q output of said first flipflop;

counter means having a clock input, a preset input, and an output, with the clock input thereof connected to the output of said clock signal generator;

another flipflop having a set input, a reset input, a Q output, and a $\overline{Q}$ output, with the set input thereof connected to the output of said counter means, with the reset input thereof connected to the preset input of said counter means, and with the $\overline{Q}$ output thereof connected to the reset input of said second flipflop; and

delay means effectively connected between the Q output of said another flipflop and the preset input of the aforesaid counter means for timely supplying a predetermined delayed signal thereto and to the reset input of said another flipflop.

4,119,917

SEQUENTIALLY TRIGGERING TWO OR MORE HYDROGEN THYRATRONS WITH PRECISION TIMING

Reuben E. Nyswander, 608 A Nimitz Ave., China Lake, and Cass R. Roquemore, 239 Peg, Ridgecrest, both of Calif. 93555

Continuation of Ser. No. 304,575, Nov. 2, 1972, abandoned. This application Nov. 3, 1977, Ser. No. 848,188
Int. Cl.[2] H03K *4/00, 5/15*
U.S. Cl. 328—67 **9 Claims**

1. A precision thyratron triggering circuit comprising:

A first thyratron having an anode, a cathode, and a grid;

a second thyratron having an anode, a cathode, and a grid;

trigger generator means connected to the grid of said first thyratron for causing said first thyratron to become conductive;

a capacitor connected to the anode of said first thyratron;

a first output connected to the anode of said first thyratron;

a tapped inductor connected in series with said capacitor so as to provide a series resonant circuit therewith;

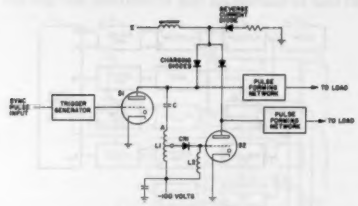
a source of negative potential connected to said tapped inductor;

an inductor connected between said source of negative potential and the grid of said second thyratron;

means connecting the tap of said tapped inductor to the grid of said second thyratron for coupling part of the resonant energy of said series resonant circuit thereto;

a second output connected to the anode of said second thyratron;

a common ground connected to the cathodes of said first and second thyratrons; and



a source of positive electrical potential effectively connected to the anodes of said first and second thyratrons, whereby the triggering of said first thyratron produces a long, slowrising pulse at said first output followed by a short fast rising pulse at said second output in response to the resonant energy coupled to the grid of said second thyratron.

4,119,918

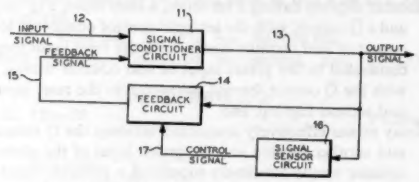
AUTO ZERO CIRCUIT

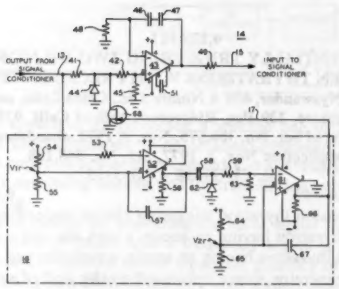
Richard A. Moser, Toledo, Ohio, assignor to Helm Instrument Company, Toledo, Ohio

Filed May 2, 1977, Ser. No. 793,149

Int. Cl.² H03K *5/08*

U.S. Cl. 328—165 **10 Claims**





1. Means for interrupting a feedback path in a signal conditioning system, the system including a source of an input signal having at least one signal pulse superimposed on a first d.c. voltage level, a signal conditioner circuit having an input connected to the input signal source and being responsive to the signal pulse for generating at an output a conditioned signal pulse superimposed on a second d.c. voltage level and a feedback means having an input connected to the signal conditioner output and an output connected to the signal conditioner input for establishing the second d.c. voltage level, the interrupting means comprising:

a source of a first reference voltage;

a first means having one input connected to said first reference voltage source and another input connected to the signal conditioner output for generating a signal at an output during the time the magnitude of the conditioned signal pulse exceeds the magnitude of said reference voltage;

a signal differentiating means;

a source of a second reference voltage;

a second means having one input connected to said second reference voltage source and another input connected to the output of said first means through said signal differentiating means for generating a control signal at an output during the time the magnitude of the differentiated first means output signal exceeds the magnitude of said second reference voltage; and

means connected to said second means output and to said feedback means input and responsive to said control signal for removing the conditioned signal pulse superimposed on the second d.c. level from said feedback means input wherein the feedback means continues to establish the second d.c. voltage level.

4,119,919

FREQUENCY DISCRIMINATOR CIRCUIT

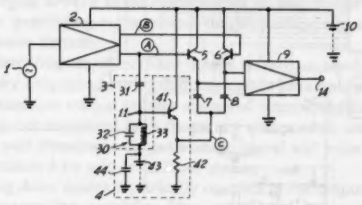
Mitsutoshi Sugawara, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1977, Ser. No. 844,981

Claims priority, application Japan, Oct. 26, 1976, 51-129197

Int. Cl.² H03D *3/22*

U.S. Cl. 329—103 **5 Claims**



1. A frequency discriminator circuit comprising an input stage amplifier responsive to an input signal for obtaining a first signal at a first output port and a second signal at a second output port, said first and second signals having different phases from each other, means for shifting the phase of said first signal, a first transistor having said first signal applied to its base, a second transistor having said second signal applied to its base, first and second capacitors having their one ends connected to the respective emitters of said first and second transistors, means for applying the output of said phase-shifting means to the other ends of said first and second capacitors, respectively, and a differential amplifier output circuit having the respective emitter outputs of said first and second transistors applied to its inputs.

4,119,920

PULSED REPEATER AMPLIFIER

Jack C. Greene, Syosset, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

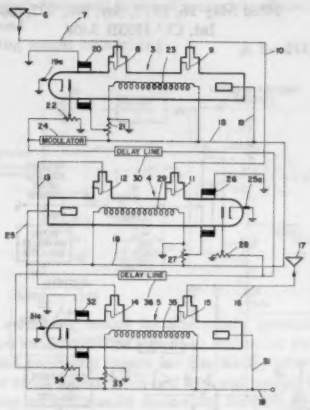
Filed Apr. 29, 1959, Ser. No. 809,893

Int. Cl.² H03F *3/58*

U.S. Cl. 330—43 **3 Claims**

1. A pulsed repeater amplifier circuit comprising three traveling wave tubes, each said tube having a helical coil disposed

therewithin; an input antenna; an output antenna; means connecting the said antennas and the said tubes in cascade so that a wave received on the input antenna is conducted successively through the said three tubes to the output antenna;



means for establishing a predetermined electrostatic field about the helical coil in each tube; and means responsive to an individual modulating signal on the control grid of each tube for amplifying the wave during predetermined intervals as it travels through each tube.

4,119,921

AMPLIFIER DEVICE FOR TRANSMITTING TETRODE

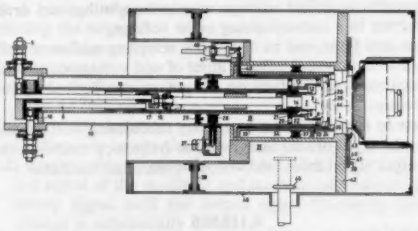
Jozef Johannus Maria Warringa, and Harry Piepers, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 29, 1977, Ser. No. 792,137

Claims priority, application Netherlands, May 3, 1976, 7604671

Int. Cl.[2] H03F *1/20*

U.S. Cl. 330—49 **6 Claims**



1. A device for amplifying signals in the frequency band of 470 to 1000 MHz comprising a tetrode having an anode, a cathode, a screen grid and a control grid, a first and second coaxial cylindrical conductor defining a resonant input cavity therebetween, means for supplying to said input cavity a signal to be amplified, a third cylindrical conductor coaxial with and insulated from said first and second conductors, means for connecting said third conductor to a source of dc voltage, means for connecting said third conductor to said control grid to thereby supply said control grid with dc voltage, a fourth cylindrical conductor coaxial with and insulated from said third conductor, at least one additional cylindrical conductor coaxial with and surrounding at least a portion of said fourth conductor, said additional conductor being spaced from and defining with said fourth conductor a resonant output cavity therebetween, means for grounding said fourth conductor and further means for connecting said fourth conductor to said screen grid to thereby ground said screen grid and reduce capacitance between said screen grid and said output cavity, means for extracting the amplified signal from said output cavity, means for connecting said anode to a source of dc voltage and terminal means for connecting said cathode to a source of heating current.

4,119,922

CIRCUIT FOR AUTOMATIC VOLUME COMPRESSION OR VOLUME EXPANSION

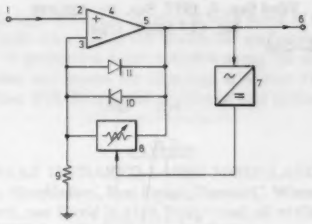
Ernst Schröder, Hanover, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H, Germany

Filed Apr. 26, 1977, Ser. No. 791,134

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619192

Int. Cl.[2] H03G *3/20*

U.S. Cl. 330—86 **8 Claims**



1. In a circuit for automatic volume compression or expansion in a signal path, including a differential amplifier, having a non-inverting input, an inverting input and an output, in the signal path between an information signal input terminal and an information signal output terminal, with a feedback path, containing electronically controlled impedance, connecting the amplifier inverting input to the amplifier output, and with a branch path, branched off from one of the information signal input and output terminals, in which a control voltage is derived from the information signal and fed to the electronically controllable impedance: the improvement comprising, in combination, means feeding the information signal to said non-inverting amplifier input; and means connected between said amplifier output and said inverting input and limiting the feedback voltage therebetween to a given value.

4,119,923

DISTORTION CORRECTOR FOR WIDE-BAND TRANSISTORIZED AMPLIFICATION STAGES

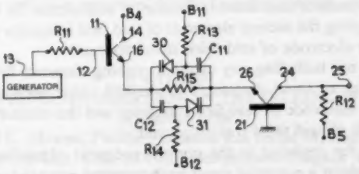
Philippe Legendre, and Jean-Marie Nef, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 15, 1977, Ser. No. 851,804

Claims priority, application France, Nov. 19, 1976, 76 34913

Int. Cl.[2] H03F *1/08, 3/10, 3/19*

U.S. Cl. 330—284 **1 Claim**



1. A corrector for a wide band transistorized amplifier having at least two cascaded amplification stages comprising a first transistor which has a common collector circuit and of which

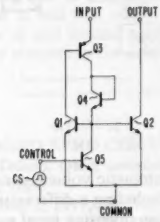
the emitter circuit is coupled with that of a second transistor having a common base circuit through first and second varactors of which the cathodes are respectively connected to the emitters of said first and second transistors, each anode of said first and second varactors being respectively connected on the one hand to the emitter of said second and first transistors through an insulating capacitor and on the other hand to two adjustable biassing sources.

4,119,924

SWITCHABLE CURRENT AMPLIFIERS

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,858
Int. Cl.[2] H03F *3/04*
U.S. Cl. 330—288 **8 Claims**



1. A current amplifier comprising:

first and second transistors of a first conductivity type and a third transistor of a second conductivity type complementary to the first, each of said transistors having first and second electrodes and a principal conduction path therebetween and having a third or control electrode, the flow of current through its principal conduction path being controlled responsive to respective control voltages between its first and third electrodes, said third transistor being a bipolar type having emitter and collector and base electrodes corresponding to its first and second and third electrodes, respectively, and having an emitterbase junction;

means for operating said third transistor in saturation, so its base current is substantially as large as its emitter current, including means for direct coupling the second electrode of said first transistor to the base electrode of said third transistor,

means for direct coupling the collector electrode of said third transistor to the third electrode of said first transistor with an offset potential greater than any afforded between the second electrode of said first transistor and the base electrode of said third transistor by said means for direct coupling the second electrode of said first transistor to the base electrode of said third transistor, and

means not including any of the foregoing elements for supplying an input current of prescribed value between the first electrode of said first transistor and the emitter electrode of said third transistor; and

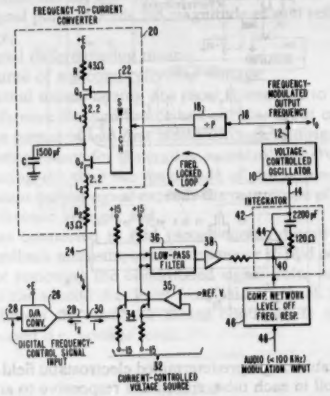
means for applying as the control potential of said second transistor a potential equal to the control potential of said first transistor appearing responsive to said input current, responsive to which said second transistor is conditioned to conduct an output current between its first and second electrodes.

4,119,925

FREQUENCY SYNTHESIZER WITH FREQUENCY MODULATED OUTPUT

Robert Jan Bosselaers, Winchester, Mass., assignor to RCA Corporation, New York, N.Y.

Filed May 16, 1977, Ser. No. 797,400
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—1 A **1 Claim**



1. Means to generate an output signal having a desired center frequency, and to frequency modulate said output signal, comprising

a voltage-controlled oscillator providing said output signal,

a frequency divider coupled to the output of said oscillator,

a frequency-to-current converter connected to the output of said frequency divider and producing an actual-frequency-representing current corresponding with the frequency of said output signal,

a digital-to-analog converter converting an input digital signal representing a desired output signal frequency to a corresponding desired-frequency-representing current,

means to produce an error current representing the difference between said actual-frequency-representing current and said desired-frequency-representing current,

a current-controlled voltage source translating said error current to a corresponding error voltage,

a low-pass filter, and an integrator, coupling said error voltage to the control voltage input of said voltage-controlled oscillator, to produce an output at the desired center frequency, and

means to apply an audio-frequency modulating voltage also to the input of said integrator, to frequency modulate the output signal from said voltage-controlled oscillator.

4,119,926

APPARATUS AND METHOD FOR STABILIZED PHASE DETECTION FOR BINARY SIGNAL TRACKING LOOPS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Phillip M. Hopkins, Houston, Tex.

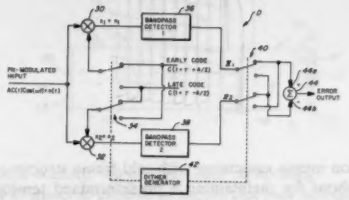
Filed Dec. 8, 1977, Ser. No. 858,765
Int. Cl.[2] H03B *3/04*
U.S. Cl. 331—1 A **17 Claims**

1. A stabilized phase detector for a signal tracking loop to track an incoming signal in the presence of gain level changes and imbalance using two local reference signals, comprising:

(a) mixer means for multiplying the incoming signal with the two local reference signals to form first and second product signals;

(b) first bandpass detector means for forming an error signal from the first product signal for tracking the incoming signal;

(c) second bandpass detector means for forming an error signal from the second product signal for tracking the incoming signal;
(d) means for forming a composite error signal from the error signals from said first and second bandpass detector means; and
(e) switching means comprising:



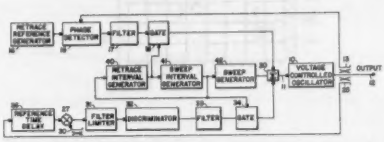
(1) first switching means for alternately interconnecting the two local reference signals to said mixer means; and
(2) second switching means for alternately interconnecting the error signals from said first and second bandpass detector means to said means for forming to thereby compensate for gain imbalance and level drift in said bandpass detector means.

4,119,927

CONSTANT RATE SWEEP FREQUENCY GENERATOR

N. Bruce Metteer, and John D. Quick, both of Phoenix, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 8, 1977, Ser. No. 814,011
Int. Cl.[2] H03B *3/04, 23/00*
U.S. Cl. 331—11 **4 Claims**



3. A method of producing a constant rate sweep frequency including the steps of:
(a) providing a variable oscillator for providing the desired frequency;
(b) periodically adjusting the oscillator to a predetermined basic or starting frequency;
(c) supplying a sweep signal to the oscillator to cause the oscillator to sweep through a desired range;
(d) continuously sensing the frequency linearity of the output signal of the oscillator and continuously adjusting the sweep signal until the output signal frequency rate of change is substantially linear.

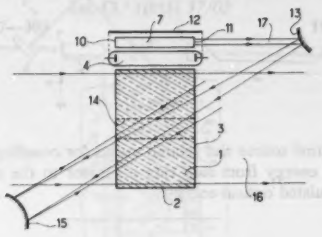
4,119,928

LASER HEAD AND APPLICATION THEREOF TO A LASER GENERATOR DEVICE

Maurice Michon, Draveil, and Bernard Sturel, Saint Cheron, both of France, assignors to Compagnie General d'Electrocite S.A., Paris, France

Filed Feb. 8, 1977, Ser. No. 766,816
Claims priority, application France, Feb. 17, 1976, 76 04313
Int. Cl.[2] H01S *3/093*
U.S. Cl. 331—94.5 P **11 Claims**

1. In a laser head comprising:
a neodymium doped glass active material; and a light source disposed so that a part of the light emitted by this source illuminates said active material and thereby excites it in order to make it capable of amplifying a laser beam having a wavelength of 1.06 microns passing therethrough, there being a position, of the active material which is less well illuminated by the light source than the rest of the active material; the improvement comprising a plurality of ruby crystals, each of said ruby crystals being disposed inside a resonant optical cavity, said crystals being situated close



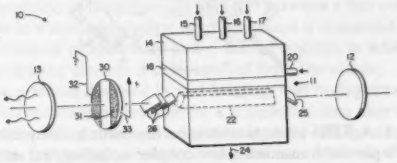
to said light source to receive at least some of that part of said light which does not illuminate said active material, so as to produce a laser radiation along the axis of these cavities; and means for directing said laser radiation on said less well illuminated portion of said active material.

4,119,929

NEAR INFRARED LASER MODULATOR

William L. Shackleford, Seal Beach; Donald C. Winter, Manhattan Beach, and David B. Hall, Hollywood, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 19, 1977, Ser. No. 798,739
Int. Cl.[2] H01S *3/10*
U.S. Cl. 331—94.5 M **5 Claims**



1. A laser for generating radiation in the wavelength region between approximately 2 and approximately 5 microns, said laser comprising:
(a) a laserable material;
(b) means for exciting the laserable material and causing a population inversion;
(c) means providing a laser cavity;
(d) means disposed in said laser cavity for linearly polarizing the radiation generated by the excited laserable material;
(e) a PLZT polycrystal disposed in said laser cavity;
(f) means for applying at will an electric voltage to said PLZT crystal for causing optical birefringence, thereby to modulate the laser output; and
(g) fluid means disposed about said crystal and transparent to the radiation generated by the laser for cooling said crystal.

4,119,930

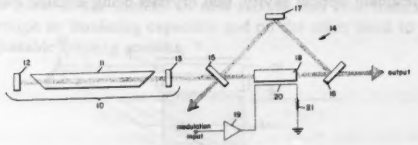
COUPLING MODULATION IN TRAVELLING WAVE RESONATOR

Richard L. Abrams, Pacific Palisades, and David M. Henderson, Playa Del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 24, 1976, Ser. No. 726,337
Int. Cl.[2] G02F *1/22*
U.S. Cl. 332—7.51 **10 Claims**

1. A wideband optical ring modulator comprising, in combination, a ring resonator supportive of unidirectionally propa-

gating optical energy, a travelling wave electro-optic modulator disposed within said ring resonator, first means for coupling unmodulated optical energy into said ring resonator from



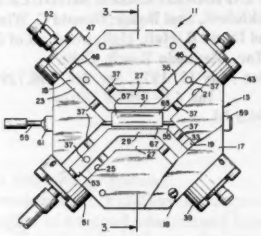
an external source and second means for coupling modulated optical energy from said ring resonator to the exclusion of unmodulated optical energy.

4,119,931

TRANSMISSION LINE SWITCH

Thomas Hudspeth, Malibu, and Harmon H. Keeling, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 6, 1976, Ser. No. 702,795
Int. Cl.[2] H01P *1/10, 5/18*
U.S. Cl. 333—7 R **8 Claims**



1. A TEM-mode transmission line switch, comprising:

a parallel transmission line coupler including first and second parallel lines; and

coupling means including a conductive vane disposed between said parallel lines and rotatable on an axis parallel to said parallel lines for isolating said parallel lines in an uncoupled position and for electromagnetically coupling said parallel lines in a coupled position, said axis being asymmetrical with respect to the cross section of said vane whereby said vane is equally spaced between said parallel lines when in said coupled position, and closer to one of said lines when in said uncoupled position.

4,119,932

LINEAR POLARIZATION SELECTIVE SCREEN

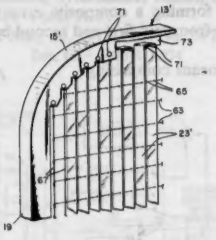
Thomas A. Bockrath, Hawthorne, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jul. 6, 1976, Ser. No. 702,787
Int. Cl.[2] H01P *1/165*
U.S. Cl. 333—21 A **13 Claims**

1. A linear polarization selective screen for interaction with electromagnetic wave energy associated with an antenna and allowing only electromagnetic waves having a desired linear polarization to pass therethrough, said screen comprising:

frame structure including first and second spaced end portions lying in a common plane;

a plurality of relatively thin conductive flat ribbons supported between said end portions of said frame structure, said ribbons being at substantially the same potential, and the broad surfaces of said ribbons being parallel and orthogonal to said common plane of said frame structure; and



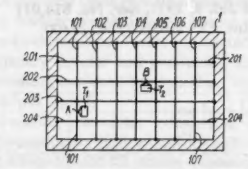
tension means associated with said frame structure and said ribbons for maintaining a predetermined tensional force on each of said ribbons.

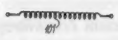
4,119,933

MECHANICAL ARTIFICIAL REVERBERATION APPARATUS

Eric P. De Lamare, Clamart, and Pierre D. Dudon, Cachan, both of France, assignors to Telediffusion de France, Montrange, France

Filed Mar. 14, 1977, Ser. No. 777,278
Claims priority, application France, Mar. 26, 1976, 76 08795
Int. Cl.[2] H03H *9/30*; G10H *1/02*
U.S. Cl. 333—30 R **11 Claims**





1. A mechanical reverberation apparatus comprising:

a rigid frame;

a lattice within said rigid frame consisting of a system of first arrayed coil springs and a system of second arrayed coil springs which are transverse to said first coil springs, a first predetermined number of said first coil springs being connected at their ends to said rigid frame and spaced to intersect a second predetermined number of said second springs to form thereby a network within said frame;

said lattice being in the form of at least a 2 dimensional array of said springs in a space covering a portion of an area which is substantially flat;

an electro-acoustic driver transducer;

an acousto-electric pick-up transducer;

said two systems of coil springs having at least one input connected to said electro-acoustic driver transducer to convert sound frequency electrical signals into mechanical vibrations;

each said system of coil springs having at least one output connected to said acousto-electric pick-up transducer to convert mechanical vibrations into new sound frequency electrical signals; and

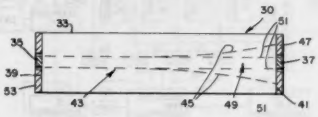
a plurality of said coil springs having their ends in the form of direct joining contact with each other by contact pressure to thereby provide a certain number of coupling points at said joining ends interconnecting said coil springs to said lattice and to each other.

4,119,934

BULK ACOUSTIC WAVE DELAY LINE

Rolf D. Weglein, Los Angeles, and Michael T. Wauk, II, Palo Alto, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 9, 1977, Ser. No. 795,352
Int. Cl.[2] H03H *9/30, 9/04*
U.S. Cl. 333—30 R 7 Claims



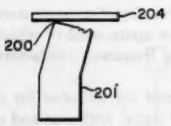
1. A bulk acoustic wave delay line, comprising:
a body of material capable of supporting bulk acoustic wave energy propagating along a path within said body, said body of material including a planar end face at each end of said path;
transducer means including a circular input transducer disposed one one of said planar end faces and a circular output transducer disposed on the other of said planar end faces for respectively converting electromagnetic wave energy to said propagating bulk acoustic wave energy and the converse thereof; and
aperture limiting means including an annular layer of bulk acoustic wave absorbing material disposed on at least one of said end faces immediately adjacent to and surrounding an associated one of said transducers for absorbing the portion of said propagating bulk acoustic wave energy impinging on said end face not covered by said associated transducer.

4,119,935

CIRCUIT INTERRUPTER INCLUDING LOW FRICTION LATCH

Raymond E. Wien, Penn Township, Allegheny County, Pa.; John F. Cotton, Athens, Ga., and Nicholas A. Salemi, Plum Borough, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 20, 1976, Ser. No. 734,069
Int. Cl.[2] H01H *9/20*
U.S. Cl. 335—167 13 Claims



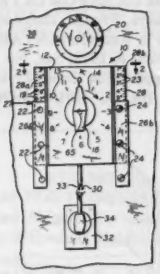
1. A circuit interrupter comprising:
separable contacts;
operating means including a releasable latch for effecting separation of said contacts upon release of said latch; and
a latching surface contacting and restraining said latch, said latching surface being movable to effect release of said latch and having a rough portion and a smooth portion, said latching surface being disposed in relation to said latch so as to cause only said smooth portion to contact said latch.

4,119,936

THERMOSTAT CONTROLLER

Lawrence J. Laviana, Kensington, Conn.; Mark H. Rhodes, Jr., Sandisfield, Mass., and Edward J. Doyle, Avon, Conn., assignors to M. H. Rhodes, Inc., Avon, Conn.

Filed Oct. 22, 1976, Ser. No. 734,721
Int. Cl.[2] H01H *37/02*
U.S. Cl. 337—303 11 Claims



1. A thermostat control device for use with a wall mounted thermostat comprising:
a bracket fixedly mountable on the wall adjacent the thermostat, said bracket having a groove therein;
a housing, a flange extending outwardly from the housing, said flange being slidably receivable in said groove for varying the distance of said housing from said thermostat;
an electric heating element disposed in the housing for heating the thermostat when said control device is mounted on the wall adjacent said thermostat;
means for connecting said heating element to a source of electricity, switching means movable between a first position in which said electric heating element is connected to the source of electricity and a second position in which the heating element is disconnected from the source;
a timing means disposed in said housing, said timing means being manually activatable for a preselected time interval and including means for deactivating said timing means upon the passage of said preselected time interval after activation thereof; and
control means operatively connected to said timing means for moving said switching means between said two positions upon the activation and deactivation of the timing means.

4,119,937

METAL BASE RESISTOR

Myron F. Melvin, 6767 Spring Brook N. Dr., Indianapolis, Ind. 46219

Filed Nov. 8, 1976, Ser. No. 739,557
Int. Cl.[2] H01C *1/012*
U.S. Cl. 338—308 9 Claims

1. A film type resistor comprising a metal base, an electrically insulating coating overlying all but a predetermined exposed portion of the metal base, a continuous resistive film deposited in overlying relation to said insulating coating, said

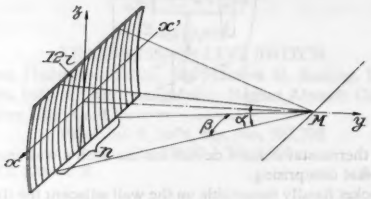
film overrunning said insulating coating only at said exposed portion of said metal base and being conductively bonded thereto, and a terminal element remote from said base-bonded portion of the film having electrical contact therewith, whereby said base and said terminal element function as terminals for the resistor.

4,119,938

METHODS AND DEVICES FOR ULTRASONIC IMAGING

Pierre Alais, Dampierre, France, assignor to Agence Nationale de Valorisation de la Rechere (ANVAR), France

Filed Nov. 6, 1975, Ser. No. 629,599
Claims priority, application France, Nov. 28, 1974, 74 39014
Int. Cl.² G01N *29/04*
U.S. Cl. 340—1 R **23 Claims**



1. A method for ultrasonic imaging with electronic scanning using an array of N identical elementary transducers distributed at equal intervals along a scanning direction, an improved scanning process comprising the steps of:

generating a single electrical signal of frequency *f*;

storing an electrical phase distribution signal representative of the phase at which said signal of frequency *f* is to be applied to *n* adjacent transducers of said array, *n* being an integer greater than 1 and less than N, said signal of frequency *f* to be applied to each of said *n* transducers either in phase or out of phase with the remaining said *n* signals by π, said electrical phase distribution signal being chosen such that said *n* adjacent transducers focus energy at a point which is located a predetermined distance from said *n* transducers;

simultaneously and temporarily applying said single signal of frequency *f* to selected ones of said set of *n* transducers with a phase shift dictated by said phase distribution signal; and

apply said signal of frequency *f* to *n* transducers at each of the plurality of successive times, each time to a set of *n* transducers which is shifted by at least one said transducer of said array of transducers, such that scanning occurs throughout said array.

4,119,939

ACOUSTIC IMAGING METHOD AND APPARATUS

Kageyoshi Katakura, Tokyo, Japan, assignor to Hitachi Medical Corporation, Japan

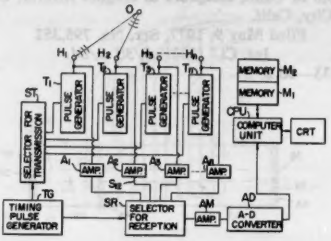
Filed Mar. 16, 1977, Ser. No. 778,088
Claims priority, application Japan, Mar. 17, 1976, 51-28051
Int. Cl.² G01S *9/66, 7/62*
U.S. Cl. 340—1 R **6 Claims**

1. An acoustic imaging method comprising:

a step of transmitting non-directional pulse-like acoustic waves from a plurality of transmitters to a target;

a step of storing, in accordance with the target position, the magnitudes of the acoustic wave signals received at time instants determined by propagation times required for the acoustic waves to propagate from said transmitters to the target position and then to a plurality of receivers; and

a step of repeating said storing step for a predetermined number of times while using a different combination of said transmitters and said receivers, whereby the magnitudes of the received signals are superposed to produce an acoustic image of said target.

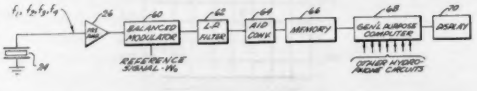


4,119,940

UNDERWATER VIEWING SYSTEM

Patrick N. Keating, West Bloomfield; Roger F. Koppelman, Livonia, and Takeo Sawatari, Southfield, all of Mich., assignors to The Bendix Corporation, North Hollywood, Calif.

Filed Oct. 18, 1976, Ser. No. 733,509
Int. Cl.² G01S *9/66*
U.S. Cl. 340—5 H **6 Claims**



1. An underwater viewing system including transmitting transducer means for insonifying a volume of water,

a large areal receiving array having a large number of hydrophones for receiving sonar reflections from objects in said volume of water,

analog-to-digital converter means,

means connecting the received signals to said analog-to-digital converter means,

means for performing two-dimensional focusing and a two-dimensional Fourier analysis on said digitized signals and for reconstructing an image as it appears at said array, and

display means connected to said image reconstructing means for displaying said image;

characterized in that said transmitting transducer means includes a plurality of separate transducers spaced a significant distance apart, each of which emits a coded output signal having frequency characteristics different from the others,

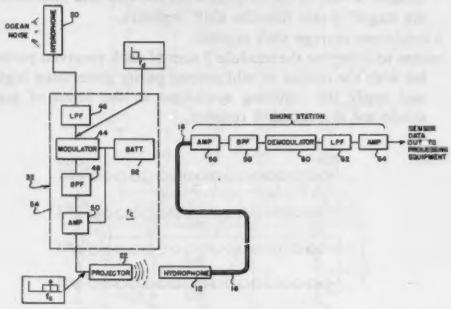
homodyne means are included for comparing each hydrophone input signal with sine and cosine reference signals at each of the transmitted frequencies for separating the frequency contributions at each hydrophone including phase information for each frequency,

said image reconstructing means including means providing spatial modulation to account for spatial separation of the transmitters and to facilitate calibration and means combining the resultant data sets to form a synthesized data set whose resolution is commensurate with an array whose number of hydrophones is that in said actual receiving array multiplied by the number of transducers in said transmitting transducer means.

4,119,941
ACOUSTIC COUPLER

Donald K. Moore, Honolulu, Hi.; George R. Beaman, Leucadia, Calif.; John D. Hightower, Kailua, and Craig W. Graham, Jr., Honolulu, both of Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1977, Ser. No. 822,463
Int. Cl.[2] H04B *11/00*
U.S. Cl. 340—5 R **10 Claims**



1. An acoustic coupler for extending the listening capability of an existing cable connected hydrophone system comprising:

a sensor which is capable of sensing a condition and producing corresponding signals;

an acoustic projector;

a cable electrically connecting the acoustic projector to the sensor;

means interconnected in the cable between the projector and the sensor for modulating signals received by the sensor on a carrier wave which is within the bandpass of the existing hydrophone; and

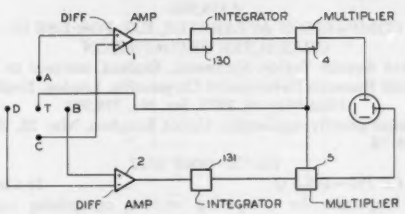
means for clamping the acoustic projector directly on the existing hydrophone;

whereby upon clamping the acoustic projector to the existing hydrophone, signals from the sensor can be transmitted over said existing cable connected hydrophone system.

4,119,942
ACOUSTIC DIRECTION FINDER

Harold M. Merklinger, P.O. Box 15, Stewiacke, Nova Scotia, Canada

Filed Jul. 7, 1976, Ser. No. 703,280
Claims priority, application Canada, Jul. 8, 1975, 231036
Int. Cl.[2] G01S *3/80*
U.S. Cl. 340—6 R **5 Claims**



1. An acoustic signal direction finder comprising

a. at least two dipole electro-acoustic transducer means disposed in quadrature,

b. a pair of differential amplifiers, each connected to a respective transducer means for providing a pair of dipole resultant signals related to the acoustic pressure difference of the acoustic signal detected along each of the dipoles,

c. integrating means connected to the output of the differential amplifiers,

d. means for providing a common sum signal of the signal received by both transducer means in phase,

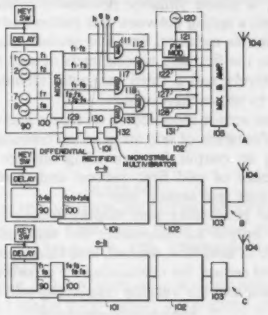
e. a pair of first multiplying means to provide a pair of display deflection signals connected to the integrating means, the individual integrated signals being applied to the respective multiplying means, and further including means for applying the common signal to both of the multiplying means, and

f. means for applying the deflection signals to deflection circuitry of a display device.

4,119,943
MONITOR SYSTEM FOR CONSTRUCTION VEHICLES

Yoshiaki Harazoe, and Shigeru Kurakami, both of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 14, 1977, Ser. No. 759,611
Int. Cl.[2] G08B *21/00*; H04Q *1/45*
U.S. Cl. 340—52 F **2 Claims**

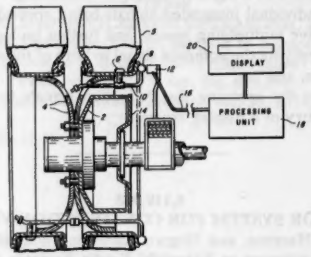


1. A monitor system for monitoring a plurality of construction vehicles, each having an engine key switch and a plurality of checkpoints, said monitoring system comprising at each said plurality of construction vehicles, a plurality of sensor means for sensing said plurality of checkpoints, respectively, and for providing an indication of abnormality at said plurality of checkpoints, respectively, audio signal oscillator means producing a set of frequencies differing from one another, said set being common to all said vehicles, mixing means for combining said frequencies in suitable combination to produce a plurality of mixed-multi-frequency signals, each of said mixed-multi-frequency signals consisting of a unique combination of said frequencies, said combination being unique both to the vehicle where generated and to all said vehicles in said monitoring system, selecting means connected to said mixing means and said sensor means for outputing respective ones of said mixed-multi-frequency signals responsive to indications of abnormality, each said sensor means produced indication of abnormality resulting in the output of a particular multi-frequency signal uniquely identifying said sensor means, a frequency modulation means for frequency modulating said outputed mixed-multi-frequency signals provided by said selecting means, and an output circuit means for transmitting the frequency modulated signal, said monitoring system further comprising a monitor station responsive to said transmitted frequency modulated signals from all said vehicles for identifying the abnormal condition and the vehicle on which the abnormal condition occurs.

4,119,944
VEHICULAR TIRE AIR PRESSURE MEASURING SYSTEM

Jesse Britton Smith, 1153 Rock Creek Dr., Garland, Tex. 75040

Filed Jun. 27, 1977, Ser. No. 810,160
Int. Cl.[2] B60C 23/02
U.S. Cl. 340—58 5 Claims



1. An air pressure measuring system for measuring the pressure of air in a tire on a moving vehicle comprising:

an air pressure transducer mounted on a wheel, said transducer comprising a tubular housing having a first end in communication with the interior volume of a tire on said wheel, a piston slidably positioned within said tubular member, a spring between said piston and a second end of said tubular member, first and second magnetic elements fixed to the first and second ends of said tubular member respectively and a third magnetic element fixed to said piston to move therewith,

a magnetic sensor mounted on a vehicle and spaced from the path of rotation of said air pressure transducer, said sensor having an output for providing signals in response to movement of said first, second and third magnetic elements past said sensor, and

electronic processing and display means coupled to said sensor output for measuring the time intervals between passage of said first, second, and third magnetic elements past said sensor, for calculating air pressure from said time intervals, and for visually displaying said air pressure.

4,119,945
ERROR DETECTION AND CORRECTION

Henry Garton Lewis, Jr., Princeton, and Seraphin Bernard Calo, Rocky Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,364
Int. Cl.[2] G06F 11/12
U.S. Cl. 340—146.1 AQ 1 Claim

1. An error detection and correction system for transmitting data words together with parity bits in a manner providing relatively greater protection for at least the highest order bit of the data words; comprising

an encoder receptive to the bits of each data word for generating a parity bit according to a self-orthogonal convolutional code constructed by the use of a difference triangle for each of the bits of the data words, the difference triangles being disjoint, at least the triangle associated with the highest order bit having a larger number of base elements than triangles associated with low order bits, said encoder including:

an encoder shift register for each bit of the data word, each shift register having outputs from the first stage and from stages displaced from the first stage by the amounts of the values of the base elements of the triangle associated with the respective data bit, and

a first parity generating logic which computes the linear modulo 2 sum of said outputs of said encoder shift registers and provides a parity bit output for each data word; and

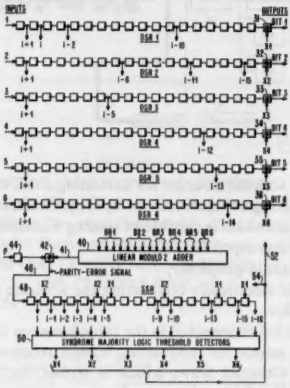
a decoder receptive over a transmission path to code words, each including a data word and an associated parity bit, from said encoder for detecting and correcting errors in the data words, said decoder including:

a decoder shift register for each bit of a received data word, each shift register having outputs from a first stage and from intermediate stages displaced from the input stage by amounts equal to the values of the base elements of the triangles associated with the respective data bits, and from a terminal stage,

a second parity generating logic which computes the linear modulo 2 sum of the outputs from the first and intermediate stages of said decoder shift registers,

a syndrome storage shift register,

means to compute the modulo 2 sum of each received parity bit with the output of said second parity generating logic and apply the resulting syndrome to the input of said syndrome storage shift register,



a syndrome majority logic threshold detector for each bit of the data word, said detectors having inputs from selected stages of said syndrome storage shift register,

an error correcting gate for each bit of the data word, each gate being receptive to the output of the terminal stage of a respective decoder shift register and the output of a respective syndrome majority logic threshold detector, and having an output providing a respective error-corrected bit of the data word, and

means coupling outputs of syndrome majority logic threshold detectors resulting from the detection of errors in solely the high order bits having difference triangles of large size, relative to the difference triangles of the low order bits, to predetermined points in said syndrome storage register to complement syndrome bits therein.

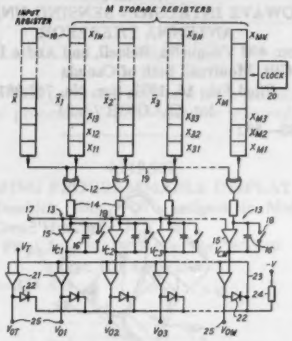
4,119,946
COMPARISON APPARATUS, E.G. FOR USE IN CHARACTER RECOGNITION

Wilfred Kenelm Taylor, Richmond, England, assignor to National Research Development Corporation, London, England

Filed May 20, 1977, Ser. No. 798,991
Claims priority, application United Kingdom, May 25, 1976, 21674/76
Int. Cl.[2] G06K 9/12
U.S. Cl. 340—146.3 Q 16 Claims

1. Apparatus for comparing vectors, comprising means defining a plurality of n.M shift registers for storing a plurality M of reference vectors each having N components represented by corresponding groups of n bits, where N and M are integers greater than 1, and n is selected from the group of small integers including unity, each shift register having a single bit output, means additional to said n.M shift registers for supply-

ing an input vector also having N components represented by corresponding groups of *n* bits, M comparison devices each adapted to compare *n* bits of said input vector with *n* bits of its corresponding one of said M reference vectors and to provide a comparison signal representing the results of the comparison, means operative in a succession of comparison operations to present the bits of the input vector *n* at a time, simultaneously to the respective comparison devices of all M said reference vectors and concurrently to present the corresponding bits of



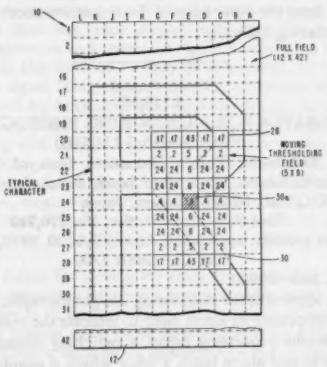
the reference vectors from the single bit outputs of said registers to the respective comparison devices, and a plurality M of summating devices operative to accumulate output signals in response to the comparison signals from the M comparison devices respectively and to provide such output signals at the conclusion of the comparison operations, that output signal whose value is at one extreme of the range of values of the output signals denoting the one of the M reference vectors with which the input vector makes the closest match.

4,119,947

OPTICAL SIGNAL PROCESSOR

Howard Noyes Leighton, 1500 Baylor Ave., Rockville, Md. 20850; Michael McHugh Siverling, 519 28th St., NW., Rochester, Minn. 55901, and Raymond John Wilfinger, 17 Square Woods Dr., LaGrangeville, N.Y. 12540

Filed Jul. 20, 1977, Ser. No. 817,465
Int. Cl.[2] G06K *9/12*
U.S. Cl. 340—146.3 AG **10 Claims**



1. An optical read circuit on a large scale integrated circuit chip for reading printed matter from documents comprising,

an integrated circuit array of optically sensitive devices on said chip each device generating a signal made up of charge packets which are analog in magnitude and discrete in time, whose magnitude represents the intensity of light reflected from the document for a single element in a multi-element picture generated by the whole array of optically sensitive devices,

an integrated circuit scanning means on said chip for sequentially selecting each of the devices to be the device of interest so that the signal generated thereby can be analyzed to determine whether it is a black or white element of said multi-element picture, said scanning means including memory means for storing said signals produced by the array of optically sensitive devices including charge signals from the device of interest and from devices surrounding the device of interest in a preselected pattern to form an information base for making the analysis of the signal from the device of interest, and

an integrated circuit analysis means on said chip for generating a binary signal indicative of whether said signal from the device of interest is a black or white element in said multi-element picture said analysis means including:

an integrated circuit weighting means on said chip for weighting all said signals from said information base relative to said signal from the device of interest,

an integrated circuit comparison means on said chip comparing each of said weighted signals to the analog signal from the device of interest, and

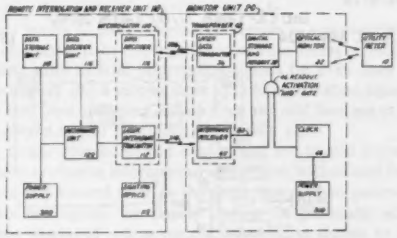
an integrated circuit logic means for producing the binary signal on the basis of the comparisons made by the comparison means.

4,119,948

REMOTE METER READING SYSTEM

Ernest Michael Ward, 6308 Jebel Way; Steven M. Ward, 325 Bright Water, and Michael A. Dils, 329 Bright Water, all of El Paso, Tex. 79912

Filed Apr. 29, 1976, Ser. No. 681,502
Int. Cl.[2] H04B *9/00*; H04Q *9/14*; G08C *19/36*
U.S. Cl. 340—151 **51 Claims**



43. An electro-optical remote utility meter reading system comprising:

utility meter monitoring means comprising a transponder responsive to light radiation and upon interrogation thereof transmitting data in the form of light radiation pulses; and

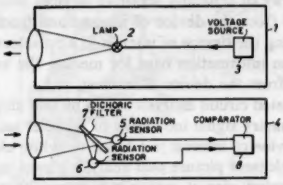
a mobile interrogation and receiver means located remote from said transponder and comprising an interrogator to trigger electrooptically with light radiation said interrogation and receive said data, and wherein said last mentioned light radiation has a beam of predetermined shape and diverging geometry, and said data is passed essentially only through an uncontrolled ambient atmospheric medium.

4,119,949

FIRE DETECTOR UTILIZING TWO BANDWIDTHS OF RADIATION

Erik Gustaf Lindgren, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 22, 1977, Ser. No. 780,009
Claims priority, application Sweden, Apr. 15, 1976, 7604502
Int. Cl.[2] G08B 17/12
U.S. Cl. 340—630 3 Claims



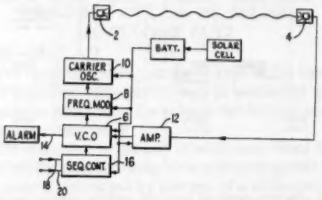
1. Optical fire detector in which a radiation-emitting means is arranged to emit a beam of radiation and a radiation-detecting means is arranged to receive the beam of radiation after it has passed through an intermediate air medium and to provide an alarm upon an obscuration of the beam of radiation, the radiation-detecting means comprising first means for individually measuring the intensity in a first and a second wavelength band of the beam of radiation and second means for comparing the individually measured intensities and providing said alarm upon a predetermined difference between them, said first means including a radiation-sensing element arranged to switch between a first and a second input of said second means, at least one of said inputs being provided with a memory, and third means being arranged to alternately divide the beam of radiation into the two wavelength bands in synchronism with the alternating switching of the radiation-sensing element.

4,119,950

GAS DETECTION

Robert J. Redding, September House, Cox Green La., Maidenhead, Berkshire, England (SL6 3EL)

Filed Feb. 18, 1977, Ser. No. 770,112
Claims priority, application United Kingdom, Apr. 7, 1976, 14179/76
Int. Cl.[2] G08B 21/00; G01N 29/02
U.S. Cl. 340—524 15 Claims



1. An alarm system for providing an alarm when an undesirable gas content occurs in the free atmosphere on a site, the system comprising:

means to generate a carrier electric signal;

an audio frequency signal generator;

a frequency modulator coupled to the carrier signal generator and to the audio frequency generator and operative to frequency modulate the carrier signal with the audio frequency signal;

a first transducer energisable by the frequency-modulated carrier signal to transmit modulated ultrasonic energy into said free atmosphere;

means responsive to the relationship between the phase of the audio modulation of the ultrasonic energy received by a second transducer and the phase of the audio modulation of the ultrasonic energy transmitted by the first transducer to generate a signal dependent upon said gas content; and

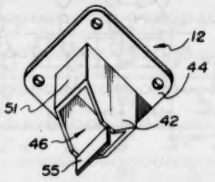
means coupled to the phase relationship responsive means to generate an alarm signal in response to the occurrence of a said undesirable gas content.

4,119,951

MICROWAVE INTRUSION SENSING UNITS AND ANTENNA THEREFOR

Gilles Garon, 408 Vauquelin, Beloeil, and Andre Henault, 2060 Charles-Gill, Montreal, both of Canada

Filed Feb. 16, 1977, Ser. No. 769,081
Int. Cl.[2] G08B 13/24
U.S. Cl. 340—552 9 Claims



1. An antenna for use in combination with a low power microwave transceiver in an intrusion detection alarm system, said antenna comprising a rectangular waveguide adapted to be coupled at its inner end to said transceiver and having a shaped aperture at its free end with a scattering blade of electrically conductive material extending across said shaped aperture in a plane parallel to the two short side walls of said waveguide and located between and generally equidistantly from said two short side walls, said scattering blade being electrically connected to said waveguide, being supported by the two wide side walls of said waveguide and extending from the free ends of the said two wide side walls and outwardly therefrom, the short side walls of said waveguide terminating short of the free ends of said two wide side walls, said shaped aperture being symmetrical with respect to the plane of said scattering blade, wherein the outer edge of each short side wall is perpendicular to said wide side walls and wherein each wide side wall is cut at an acute angle with respect to said plane and extends from the outer edge of the respective short side wall to said scattering blade.

4,119,952

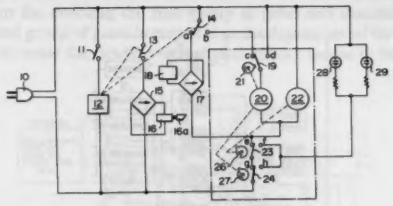
APPARATUS FOR MONITORING PHOTOGRAPHIC PROCESSING LIQUID

Yutaka Takahashi; Yoshio Hakamata, both of Tokyo, and Masamitu Konno, Hino, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minaniashigara, Japan

Filed Feb. 22, 1977, Ser. No. 770,780
Claims priority, application Japan, Feb. 20, 1976, 51-17510
Int. Cl.[2] G08B 1/00
U.S. Cl. 340—309.1 4 Claims

1. An apparatus for monitoring the photographic processing liquid comprising an alarm lamp to indicate the renewal of said photographic processing liquid, a switching means connected in series to said alarm lamp, a timer which is adapted to act on said switch for closing after the lapse of a predetermined length of time subsequent to the renewal of said developing liquid, and a counter to count the photographic film rolls which have been developed, said counter being adapted to act on said switching means for closing the same when the total count of the photographic film rolls has reached a predeter-

mined number, whereby the monitoring is performed in terms of both the effective period of time and the amount of the



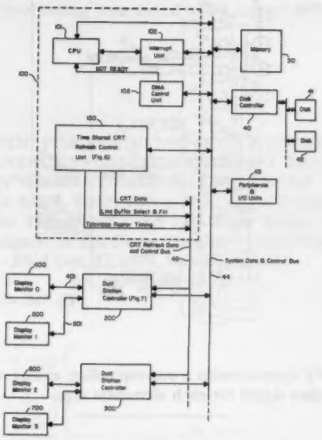
photographic film processed until said lamp indicates that said photographic processing liquid should be renewed.

4,119,953

TIMESHARING PROGRAMMABLE DISPLAY SYSTEM

Waldemar Yeschick, Ilion, N.Y., assignor to Mohawk Data Sciences Corp., Herkimer, N.Y.

Filed Jan. 24, 1977, Ser. No. 761,849
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—324 AD **8 Claims**



1. In display apparatus for N display units, N being an integer greater than one, each display unit having a television monitor responsive to a television signal to display a frame of characters in the form of M lines of characters, M being an integer, the signal being characterized by a periodic television raster defined by horizontal and vertical timing signals produced by a source of timing signals, the raster being adapted for encoding with a frame of character codes corresponding to and manifesting said frame of characters; each unit further including a unit line buffer for storing said frame of codes, a line at a time, means for reading the codes from said buffer, and means for combining the raster timing signals with the codes so read to produce said television signal; said display apparatus comprising:

memory means for storing for each display unit

(a) the associated frame of character codes in the form of M blocks of codes in any order of block storage locations therein, each block having a starting address and the codes in each block manifesting a line of characters, and

(b) a frame display program including M instructions corresponding to the M blocks, each instruction specifying the starting address of the associated block of codes,

instruction execution means including

(a) basic counting means responsive to the horizontal timing signals for generating a set of character line signals defining M time periods and a further set of signals defining a group of horizontal timing signals occurring within each of the M time periods;

(b) first control means utilizing the character line signal set and the further signal set to process N instructions in N sequentially occurring time slots during each character line time period, one from each program, to retrieve from memory during each such period the N blocks of codes associated with said N instructions; and

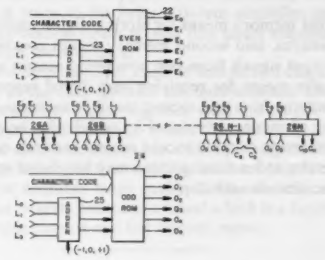
(c) second control means responsive to said signal sets to load the N blocks of codes into the corresponding N unit line buffers during each such period so that each program has one of its M instructions executed during each of the M time periods in each television frame.

4,119,954

HIGH RESOLUTION CHARACTER GENERATOR FOR DIGITAL DISPLAY UNITS

Charles Lewis Seitz, Fallbrook, and Paul Grunewald, San Diego, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 15, 1977, Ser. No. 777,689
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—324 AD **8 Claims**



1. A system for displaying characters in a dot matrix form, said system comprising:

a display unit having a display face and means to scan said display face in an interlaced scan mode;

storage means to store information signals to representative of characters to be displayed, said storage means including a first store to hold information signals for even lines of the display and a second store to hold information signals for odd lines of display, which even and odd lines are to be displayed in said interlaced scan mode; and

logic means coupled to said display unit and to said storage means to receive information signals from both of said first store and second store at the same time and to generate extra bits signals for display during the particular scan being displayed whenever the information signals to be displayed form a diagonal.

4,119,955

CIRCUIT FOR DISPLAY, SUCH AS VIDEO GAME DISPLAY

Andrew J. Nichols, III, Palo Alto, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 24, 1977, Ser. No. 780,967
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—324 AD **15 Claims**

1. A circuit for controlling the display of patterns comprising:

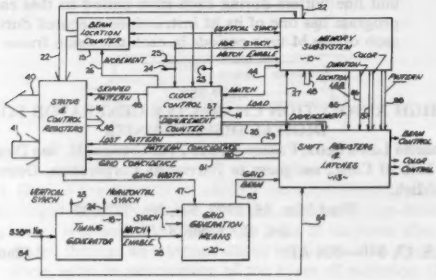
a digital counter for providing a first digital signal representative of display beam location;

comparator means for comparing said first digital signal

with a second digital signal representative of the desired location of an object on said display, said comparator means coupled to said digital counter;

first memory means for storing digital information and for providing output signals representative of pattern storage locations, said first memory means coupled to said comparator means;

combining means for combining two digital signals, said combining means receiving said output signals from said first memory means and a digital signal representative of vertical beam location;



second memory means for storing digital representations of patterns, said second memory means coupled to receive output signals from said combining means; and

transfer means for receiving said digital representations of patterns from said second memory means and for providing a beam control signal for said display beam, said transfer means coupled to said second memory means;

whereby at least one pattern may be placed at said desired location on said display.

4,119,956

RASTER-SCAN DISPLAY APPARATUS FOR COMPUTER-GENERATED IMAGES

Paul Michael Murray, Tunbridge Wells, England, assignor to Redifon Flight Simulation Limited, Crawley, England

Filed Jun. 22, 1976, Ser. No. 698,708

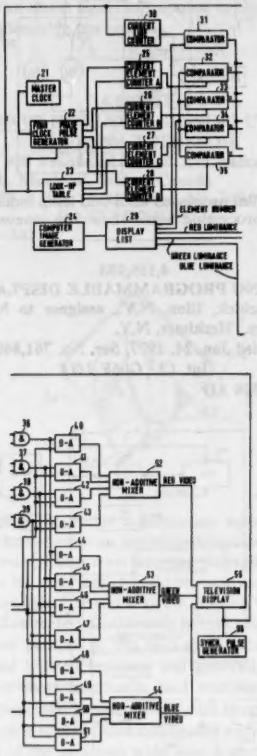
Claims priority, application United Kingdom, Jul. 16, 1975, 29812/75; Jun. 30, 1975, 27459/75

Int. Cl.[2] G06F 3/14

U.S. Cl. 340—324 AD **6 Claims**

1. In a digitalized visual display system employing a display device having a screen whose area is scanned by a plurality of displaced scanning lines, with each line traversing a number of elemental areas on the screen, and wherein a data signal to be displayed is periodically sampled, and a quantised signal is produced for each data sample and applied to the display device to incrementally create a visual image, the improvement comprising means for improving the resolution of the visual image:

said resolution improving means including means for producing a time displaced series of additional samples of the data signal during the time interval that the scanning beam traverses each elemental area on the screen, means for quantising each of samples to begin and to terminate at a different time than the other quantised samples, and combining means for applying said combined plural quantised samples to the display device for each elemental area, thereby to provide a combined quantised signal that more



nearly approximates a corresponding analog variation of the data signal for each elemental area.

4,119,957

DIGITAL DISPLAY FOR COOKING TIME AND POWER OF ELECTRIC COOKING DEVICE

Masayuki Sasaki, Kawasaki, and Motokazu Tamano, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1976, Ser. No. 748,896

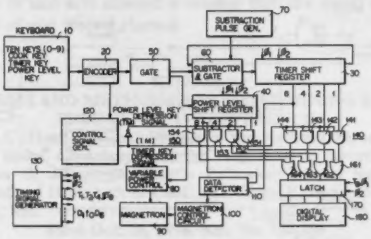
Claims priority, application Japan, Dec. 10, 1975, 50-146366

Int. Cl.[2] G06F 3/14

U.S. Cl. 340—337 **1 Claim**

1. A digital display apparatus for indicating a cooking time and power level of an electric cooking device comprising a first shift circulating register means having a plurality of digit stages for storing a cooking time data; a second shift register means having only four bit elements for storing a data for setting a power level of the electric cooking device; data entry means including digit keys, a timer key and a power level key for entering a cooking time data into the first shift register means in response to the depression of the timer key and subsequently selected digit keys and for entering a power level setting data into the second shift register means in response to the depression of the power level key and a subsequently selected digit key; a four-bit latch circuit; a time-division digital display means coupled to four bit outputs of the latch circuit; a first group of four gates coupled between four bit outputs of a predetermined digit stage of the first shift register

means and four bit inputs of the latch circuit; a second group of four gates coupled between four bit outputs of the second shift register means and the four bit inputs of the latch circuit; and means for enabling the first group of gates and disabling the second group of gates in response to the depression of the timer key to cause the time-division digital display means to indicate



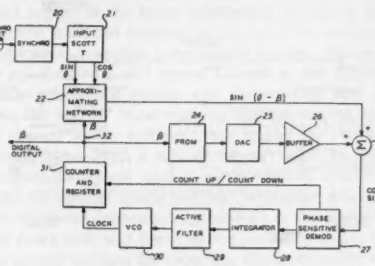
the cooking time data stored in the first shift register means and for enabling the second group of gates and disabling the first group of gates in response to the depression of the power level key to cause the time-division digital display means to indicate the power level setting data stored in the second shift register means.

4,119,958

METHOD FOR ACHIEVING HIGH ACCURACY PERFORMANCE FROM CONVENTIONAL TRACKING SYNCHRO TO DIGITAL CONVERTER

David Julian Simon, Saddle Brook, N.J.; Alfred Douglas Gronner, White Plains, N.Y., and Carl Cono Stella, Valencia, Calif., assignors to The Singer Company, Little Falls, N.J.

Filed Oct. 23, 1975, Ser. No. 625,215
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 SY **3 Claims**



1. A synchro to digital converter having means to compensate for the inherent systematic converter error comprising;

a source of input synchro analog signals;

means for converting said input synchro analog signals to digital signals;

means for deriving a first analog error signal representing the difference between said input synchro analog signals and the analog equivalent of said digital signals by approximating the synchro input signals with straight line approximations of non-linear sine and cosine functions;

means for storing digital signals representative of the inherent systematic error and means for generating a second analog error signal representative of said stored digital signals; and

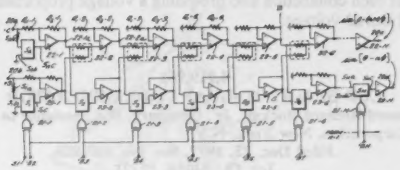
means for combining said second error signal with said derived first error signal to correct for output error.

4,119,959

MULTI-BIT FUNCTION GENERATOR

Seymour Lanton, Plainview, N.Y., assignor to ILC Data Device Corporation, Bohemia, N.Y.

Filed Sep. 14, 1976, Ser. No. 723,111
Int. Cl.[2] H03K *13/00*
U.S. Cl. 340—347 SY **13 Claims**



1. A resolver to digital type converter comprising function generator means having:

first and second chains, each of said chains, in turn, being comprised of at least four(4) operational amplifier stages, each having two inputs and an output;

the amplifiers of a first one of said chains being connected in cascade fashion with the output of each stage being connected to a first input of the next stage;

plural switch means each being associated with one stage of said second chain or amplifiers for selectively coupling each such stage to the prior adjacent amplifier stage of either said second chain or said first chain responsive to binary input control data;

the output of each amplifier stage of said second chain being summed at the first input of the next adjacent amplifier stage of said first chain together with the output of the amplifier of the same stage in said first chain;

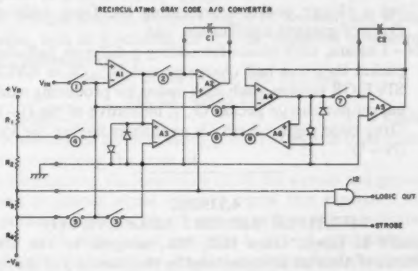
each of said chains having an input for receiving a reference signal applied to the first amplifier and an output coupled to the last amplifier stage in the chain, whereby at least one of the outputs generates a signal which is a function of the reference inputs and the control inputs.

4,119,960

METHOD AND APPARATUS FOR SAMPLING AND HOLDING AN ANALOG INPUT VOLTAGE WHICH ELIMINATES OFFSET VOLTAGE ERROR

Lorimer K. Hill, Cupertino, Calif., assignor to Siliconix Incorporated, Santa Clara, Calif.

Filed Feb. 11, 1977, Ser. No. 767,735
Int. Cl.[2] H03K *13/09*
U.S. Cl. 340—347 AD **8 Claims**



1. A method of sampling and holding an analog input voltage utilizing a two amplifier sample and hold circuit, the output of the first amplifier being connected to an input of the second amplifier, the second amplifier forming a Miller integrator and providing a feedback of the stored voltage on the capacitor of the Miller integrator to one input of the first amplifier which is a comparator and having the analog input voltage as another input which is compared with the feedback

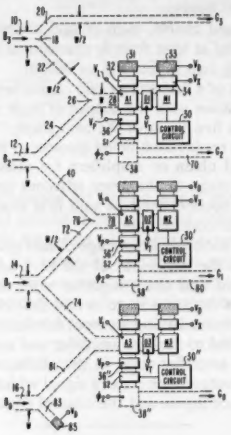
of the stored voltage to produce a correcting output, the method comprising the following steps: sampling and holding said analog voltage by use of said two amplifier sample and hold circuit; thereafter disconnecting said analog input voltage from the input of said first amplifier and disconnecting the output of the first amplifier from the input of the second amplifier; and converting said first amplifier to an amplifier of predetermined gain by connecting the output to said disconnected input such connection also providing a voltage proportional to said stored voltage.

4,119,961

CCD BINARY-TO-GRAY CODE GENERATOR

Leonard Richard Rockett, Jr., Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,920
Int. Cl.[2] H03K *13/25*
U.S. Cl. 340—347 DD **6 Claims**



1. A charge-coupled device (CCD) binary-to-Gray code converter comprising, in combination:

N input CCD channels for N charge signals $B_{N-1} \cdots B_0$ indicative of an N digit binary code, where B_{N-1} represents the digit of greatest significance and B_0 the digit of least significance, each such charge signal comprising a packet of charge of the same size;

means for dividing each charge packet substantially in half, one half of the charge packet $B_{N-1} = (B_{N-1}/2)$ comprising a charge packet representing the Gray code digit G_{N-1} of greatest significance; and

N−1 means, each means for adding a different half charge packet $B_j/2$ to a half charge packet $B_{J-1}/2$, in EXCLUSIVE OR fashion, each such means for producing a different output charge packet G_{j-1}, indicative of the (j−1)'th Gray code digit, where *j* is an integer having the values (N−1) . . . 1.

4,119,962

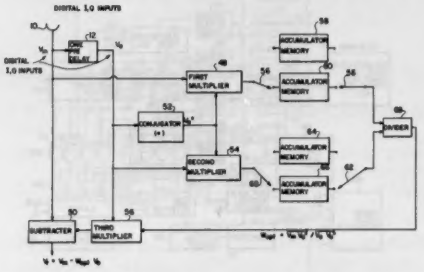
MULTIPLE MEMORY ADAPTIVE MTI

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1977, Ser. No. 854,446
Int. Cl.[2] G01S *9/42*
U.S. Cl. 343—7.7 **5 Claims**

1. In a moving-target-indicator radar system having an antenna for receiving successive pulses, one or more serial PRI delays to delay said successive pulses and provide said successive pulses as concurrent signal sources, and an MTI canceller having one or more adaptive loop cancellers for receiving said concurrent signal sources and cancelling correlated components between said signal sources, the improvement to said MTI cancellers which comprises:

multiple memory means included in each said adaptive loop canceller, with each memory means receiving a weight developed in the adaptive loop canceller for a different



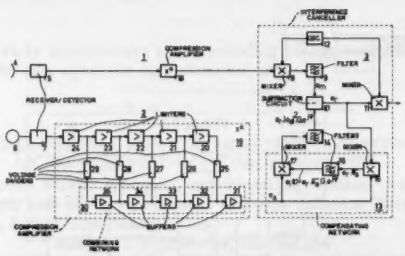
range interval and storing the weight for the range interval on a pulse-to-pulse basis, and each adaptive loop canceller having a means for switching said memory means into said adaptive loop circuit during the range interval, the memory means for each of said adaptive loop cancellers for a particular range interval being switched simultaneously.

4,119,963

COHERENT SIDE-LOBE SUPPRESSING UNIT FOR A PULSE RADAR APPARATUS

Johan Martin Carol Zwarts, Borne, and Geert Koops, Haaksbergen, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo (O), Netherlands

Filed Mar. 30, 1977, Ser. No. 782,930
Claims priority, application Netherlands, Apr. 6, 1976, 7603559
Int. Cl.[2] G01S *9/233*
U.S. Cl. 343—17.2 PC **4 Claims**



1. A radar system comprising a directional antenna, a transmitter coupled to said directional antenna, an omnidirectional antenna and a receiver to suppress interference signals during reception of target returns, said receiver including a first channel having an output and an input coupled to said directional antenna and a second channel having an output and an input coupled to said omnidirectional antenna, each of said channels including means for intermediate-frequency detection of signals composed of target returns and interference signals and a compression amplifier coupled to said detection means, said amplifier each having an amplitude transfer characteristic such that the signal $y(t)$ at said output of the respective channel approximates $y(t)=[x(t)]\alpha$, where $0<\alpha<1$ and $x(t)$ is the input signal to the respective compression amplifier, said receiver further comprising an interference canceller including a subtracting circuit having a pair of inputs and an output, means for coupling said output of said first channel to one of said inputs

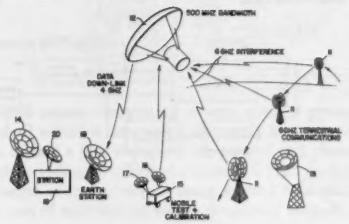
of said subtracting circuit, and a phase and amplitude compensating network coupled to said output of said second channel and said output of said subtraction circuit and having an output coupled to the other of said inputs of said subtraction circuit, said network generating at said output thereof a signal substantially equal in phase and amplitude to the signal coupled to said one input of said subtraction circuit when the signal at said output of said first channel is weaker than the signal at said output of said second channel.

4,119,964

SYSTEMS AND METHODS FOR DETERMINING RADIO FREQUENCY INTERFERENCE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Klaus G. Johannsen, Pacific Palisades; Samuel Sabaroff, Woodland Hills, both of Calif., and Varice F. Henry, Hyattsville, Md.

Filed Oct. 28, 1976, Ser. No. 736,286
Int. Cl.[2] G01S *7/40*
U.S. Cl. 343—17.7 **17 Claims**



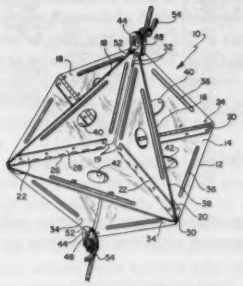
12. A system for determining radio frequency interference with communication links including a celestial body and an artifical geostationary satellite of the body, said interference originating from the body, said links being in a predetermined spectrum, comprising a relay station on the satellite said relay station including a narrow beam antenna pointing at a predetermined region of the body establishing an uplink for said interference, a second antenna on the body for establishing a communication downlink between the satellite and an Earth station on the body, and means located at the satellite for frequency translating signals and transmitting said signals between the narrow beam antenna and the second antenna; means located at the predetermined region for transmitting calibration signals with a predetermined region for transmitting calibration signals with a predetermined EIRP in the spectrum via another uplink toward the satellite, whereby the satellite relays the calibration signals back to the Earth station via said down link, said Earth station including means including the second antenna for receiving electromagnetic energy shifted in frequency by the relay station and coupled from the region to the Earth station via the satellite, circuit means at the Earth station for operating said receiving means while only RFI noise sources in the spectrum radiate from the region toward the narrow beam antenna via the interference uplink and only the calibration signals are in said another uplink and for operating the receiving means to be responsive to the calibration signals in the spectrum transmitted from the region through the narrow beam antenna and relayed through the satellite to the Earth station, said circuit means being responsive to the electromagnetic energies received by the Earth station for comparing the levels of the received energies while RFI noise sources and the calibration signals are transmitted from the region to the Earth station via the narrow beam antenna and the satellite to enable the presence of a source of radio frequency interference in the spectrum to be determined at the region.

4,119,965

RADAR REFLECTOR

Philip Kaszyk, 15 Nassau St., Pawtucket, R.I. 02860

Filed Aug. 8, 1977, Ser. No. 822,812
Int. Cl.[2] H01Q *15/18*
U.S. Cl. 343—18 C **2 Claims**



1. A foldable radar target, comprising a base plate of generally planar configuration, a set of four top quarter plates each of right angle triangular configuration and each having a first base side hingedly connected to the upper surface of said base plate along two intersecting lines, a set of four bottom quarter plates each of right angle triangular configuration, and each having a first base side thereof hingedly connected to the lower surface of said base plate along two intersecting lines, the second base sides of said top and bottom quarter plates respectively adapted for proximal disposition to each other along a generally vertical line when said target is in an upright use position and for disposition to the first base side of an adjacent quarter panel when said target is in a generally flat, folded, storage position, each of said quarter panels having means disposed at the terminal end of its second base side distal from said base plate when in said upright position for simultaneously suspending said target as from a boat and for maintaining said target in an upright position, said means for suspending and maintaining said target in an upright position including rings disposed at said terminal second base ends, the rings of said top and bottom quarter plates respectively being interconnectable with each other.

4,119,966

CLUTTER DISCRIMINATING APPARATUS FOR USE WITH PULSED DOPPLER RADAR SYSTEMS AND THE LIKE

David William Bouvier, Tempe; Charles H. Brenner, and Walker Butler, both of Scottsdale, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 14, 1977, Ser. No. 815,760
Int. Cl.[2] G01S *9/42*
U.S. Cl. 343—7.7 **7 Claims**

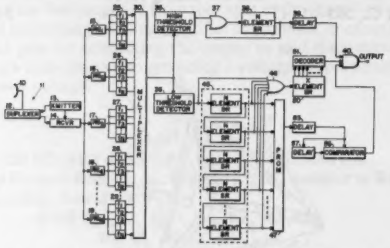
6. A method of discriminating preferred signals from clutter signals comprising the steps of:

(a) determining the amplitude of all the signals and providing an output signal for each signal that exceeds a first predetermined threshold and providing a first indication for each signal that exceeds a second predetermined threshold higher than the first predetermined threshold;

(b) determining the time duration of each output signal and the time separation from adjacent signals and providing a second indication for each output signal that lies within a relatively narrow time period and does not have other signals adjacent thereto within a wider predetermined time period;

(c) determining the frequency bandwidth of each output signal and the frequency separation of adjacent output signals and providing a third indication for each output

signal that lies within a predetermined relatively narrow bandwidth and which does not have other signals adjacent thereto within a wider predetermined bandwidth; and



(d) providing a preferrred signal detection indication each time the first, second and third indications are present for a signal.

4,119,967

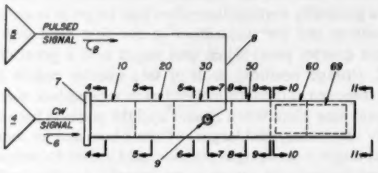
MICROWAVE DUAL MODE NON-INTERFERING CW AND PULSED SIGNAL SYSTEM METHOD AND APPARATUS

Gilbert R. Johnson, Cupertino, and Frank A. Olson, Palo Alto, both of Calif., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed May 21, 1976, Ser. No. 690,104

Int. Cl.[2] H04B 7/00

U.S. Cl. 343—100 PE **2 Claims**



1. A microwave subsystem capable of simultaneously amplifying CW and pulsed signals comprising, in combination,

a CW amplifier tube,

a pulsed power amplifier tube,

a magic "T" hybrid having two input arms

and two output arms,

means for coupling a first signal from said CW amplifier tube to one of said input arms of said hybrid,

means for coupling a second signal from said pulsed power amplifier tube to the other of said input arms of said hybrid,

means for shifting by 90° the phase of the signals in one of said output arms of said hybrid,

a double ridge waveguide having first and second pairs of opposed sidewalls and a pair of ridges projecting inwardly from said first pair of double ridge sidewalls,

means for coupling said first CW signal from said magic "T" to said double ridge waveguide,

a quad ridge waveguide including first and second pairs of opposed sidewalls having respectively first and second pairs of ridges projecting inwardly therefrom,

a transition guide connecting said double ridge and said quad ridge waveguides and having a first pair of ridges connected to said pair of ridges of said double ridge waveguide and said first pair of ridges of said quad ridge waveguide and having a pair of opposed tapered transition ridges tapering from said second pair of double ridge sidewalls to said second pair of ridges of said quad ride waveguide,

means for coupling said pulsed power signal from said magic "T" to said quad ridge waveguide for propagating said pulsed power signal therein orthogonally with respect to said CW signal,

means for providing a short circuit in said quad ridge waveguide between said means for coupling side pulsed power signal thereto and said transition guide for preventing propagation of said pulsed power signal into said double ridge waveguide whereby said CW signal and said pulsed power signal propagate orthogonally in said double ridge waveguide,

an antenna for radiating said CW and pulsed signals, and

means connecting said antenna to said quad ridge waveguide including means for polarizing said orthogonally propagating CW and pulsed signals in opposite sense whereby said CW and pulsed signals are radiated from said antenna as signals with circular polarizations of opposite sense.

4,119,968

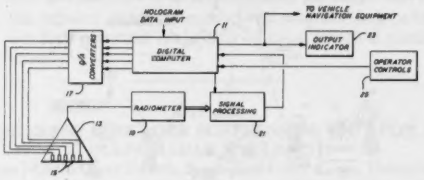
MICROWAVE CORRELATOR

Lester I. Goldfischer, New Rochelle, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Nov. 2, 1976, Ser. No. 738,002

Int. Cl.[2] G01J 1/10

U.S. Cl. 343—100 ME **7 Claims**



5. Apparatus for carrying out an all weather position correlation to determine the position of an object suspended above a land mass comprising:

(a) a multi element phased array antenna each element in said antenna having means for controlling the phase thereof;

(b) a digital computer having stored therein a phase hologram of a land area with which correlation is desired;

(c) means to couple the stored hologram information in said computer to the individual phase control means for the elements of said antenna;

(d) a radiometer coupled to the output of said antenna;

(e) a display; and

(f) means coupling the output of said radiometer to said display.

4,119,969

SCANNING BEAM NAVIGATIONAL BEACON WITH TRANSMITTED COHERENCE REFERENCE SIGNAL AND THINNED TWO-DIMENSIONAL PHASED ARRAY

Paul Barton, Bishop Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 6, 1977, Ser. No. 803,444

Claims priority, application United Kingdom, Jun. 10, 1976, 23994/76

Int. Cl.[2] G01S 1/16, 1/18

U.S. Cl. 343—108 M **9 Claims**

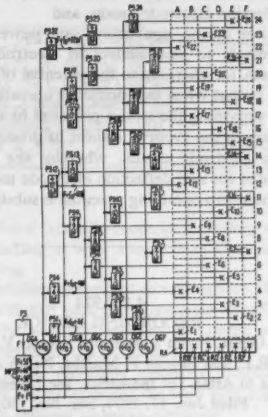
1. A scanning-beam navigational radio beacon comprising:

a main antenna array including n first antenna elements randomly placed within a two-coordinate array configuration having $m \times n$ possible element locations, where $m \geqq 2$ and $n > m$, said n coordinate being the direction of scan, said first elements being placed one to a level in the n direction of said array and n/m elements being placed within each of said m columns of said first elements extending in said n coordinate;

a reference array including at least m second antenna elements each geometrically associated with one of said m columns of said first elements;

first means for generating an arithmetic progression of *m* first radio frequencies connected one to each of said *m* second antenna elements;

second means responsive to said first radio frequencies for generating *m* second frequencies each equal to one of said first frequencies plus a uniform offset;



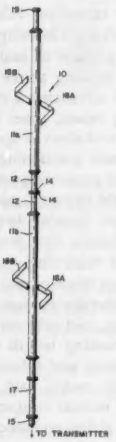
and third means comprising *n* scan control phase shifters each of which is connected discretely to a corresponding one of said *n* first elements, the ones of said phase shifters corresponding to said first elements within each of said *m* columns of first elements being excited by a corresponding one of said second means frequency outputs.

4,119,970

DIPOLE-SLOT TYPE OMNIDIRECTIONAL TRANSMITTING ANTENNA

Richard D. Bogner, 4 Hunters La., Roslyn, N.Y. 11576, and Leonard H. King, 67 Southgate Rd., Valley Stream, N.Y. 11581

Filed Oct. 19, 1977, Ser. No. 843,586
Int. Cl.[2] H01Q *21/00, 13/10, 9/16*
U.S. Cl. 343—727 **3 Claims**



1. In a tramsmitting antenna for radiation of signals of wavelength λ consisting of:

(a) a conductive tubular member elongated along a principal axis having a pair of diameterically opposed elongated slots parallel to the said axis defined by a pair of opposed side walls, the slots having an approximate length of λ/2;

(b) a first conductive arm of a length of approximately λ/4 extending arcuately from one of said side walls at approximately the midpoint of the slots, and in electrical connection thereto oriented at an angle of from 30° to 60° to the said axis;

(c) a second conductive arm of a length of approximately λ/4 extending arcuately from the approximate middle of the other of said side walls and in electrical connection thereto at an angle of from 30° to 60° to the said axis; and

(d) means for connecting said antenna to a source of signals of wavelength λ for electrically exicting said slots, and in turn exciting said conductive arm, the improvement comprising:

a pair of bushings secured to said tubular members on unslotted portions of said tubular member, the bushings of said pair being axially spaced by said slots;

a circumferential groove in each of said bushings;

an O-ring in each of said circumferential grooves;

a filament wound resin bonded tube surrounding the slot portion of said tubular member and sealed to said bushings by said O-rings;

means mechanically clamping said tube to said bushings; and

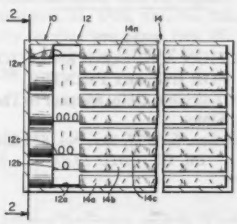
electrically conductive members extending through said tube and attached to said slot walls securing the conductive arms.

4,119,971

HIGH DATA RATE FREQUENCY SCAN SLOTTED WAVEGUIDE ANTENNA

Louis Stark, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 4, 1977, Ser. No. 765,464
Int. Cl.[2] H01Q *13/10*
U.S. Cl. 343—768 **4 Claims**



1. An improved frequency scanning antenna providing a faster scan capability comprising:

means for receiving a frequency varying signal for frequency scanning in one plane;

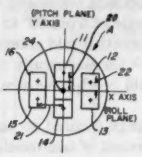
delay means coupled to said receiving means for providing a signal having a predetermined phase error function in response to said frequency varying signal for providing predetermined beam broadening as said frequency changes in a predetermined manner, said beam being narrow at a first angle of scan in said plane and progressively becoming broader as said frequency approaches a second angle of scan on said plane;

parallel linear array antenna means for providing a plurality of output signals, each successive signal having an incrementally varying beam width in response to said delay line means for frequency scanning in said plane in decreased scan time.

4,119,972
PHASED ARRAY ANTENNA CONTROL

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and George D. Doland, Houston, Tex.

Filed Feb. 3, 1977, Ser. No. 765,165
Int. Cl.[2] H01Q *3/26*
U.S. Cl. 343—844 2 Claims

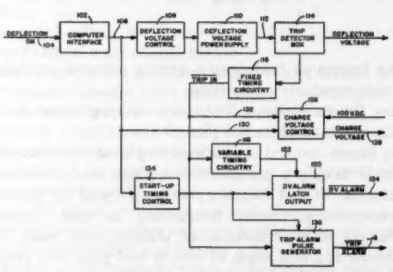


1. In a phased-angle antenna having a relatively small number of elements for radiating signals at one frequency and receiving signals at another frequency, an improvement for effective operation of the antenna at both frequencies comprising said antenna elements being arranged in a two-dimensional planar matrix of elements spaced in first and second directions with respect to a center point of the array and having the spacing in one of said directions a distance of approximately one-half wavelength of the average of said frequencies and in the other of said directions by a distance equalling the product of one and a fraction times the distance in said one of said directions, and a four bit digital control circuit for changing the phase angle of the elements wherein a phase angle increment of $\pi/6$ radians and proportional to the radiating frequency and the receiving frequency is available for steering the antenna, said control circuit including least significant digital control means to control the phase angle in one phase angle increment, next significant digital control means to control the phase angle in two phase angle increments, next most significant digital control means to control the phase angle in four phase angle increments, and most significant digital control means to control the phase angle in seven phase angle increments.

4,119,973
FAULT DETECTION AND COMPENSATION CIRCUIT FOR INK JET PRINTER

William R. Stager, Fairborn, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 6, 1977, Ser. No. 831,094
Int. Cl.[2] G01D *18/00*
U.S. Cl. 346—75 9 Claims



1. An ink jet printer for depositing ink drops on a print medium, comprising

means for forming a jet stream of ink drops directed at the print medium,

means for charging drops in said jet stream,

deflection electrode means, adjacent said stream, for providing a drop deflecting electrical field when a non-zero operating potential is applied thereto, said drops passing through said field prior to striking the print medium, and

means for applying a non-zero operating potential to said deflection electrode means, including:

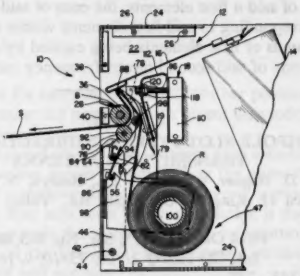
a power supply having a pair of output terminals, deflection electrode supply cable means, connected to said deflection electrode means, and

capacitor means, connecting said power supply output terminals to said deflection electrode supply cable means, for charging to the potential of said power supply output when said printer is operating normally and for providing the stored potential to said supply cable means in the event of a short to ground of said deflection electrode means, whereby the period of time needed for said deflection electrode means to return to its non-zero operating potential is substantially reduced.

4,119,974
RECORDING DEVICE

Albert W. Ondis, North Kingstown; Everett V. Pizzuti, Exeter, both of R.I., and Eugene F. Martha, North Attleboro, Mass., assignors to Atlan-Tol Industries, Inc., West Warwick, R.I.

Filed Jan. 17, 1977, Ser. No. 760,234
Int. Cl.[2] G01D *15/28*
U.S. Cl. 346—145 17 Claims

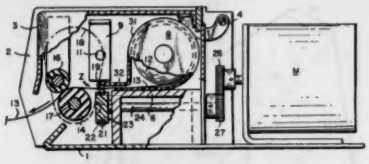


1. A device for recording information in a continuously moving sheet comprising a housing having a front face opening including a lower portion of said opening, recording means supported by said housing above said lower portion of said opening, means for advancing a running length of said sheet past said recording means, sheet positioning means for positioning portions of said sheet in operative association with said recording means, said positioning means comprising a door member adapted for projection into the space defined by said lower portion of said opening, said door pivotally positioned with respect to said housing towards and away from said recording means from a first position wherein said sheet is removed from said recording means to a second operative position with respect thereto, said member including a subassembly supported thereby for independent pivotal movement with respect thereto, said subassembly having a first segment for supporting a running length of said sheet, said housing including guide means, said subassembly including means for engaging said guide means, said guide and guide engaging means adapted for mutual contact during movement of said member between said first and second positions so as to control the independent pivotal movement of said subassembly with respect thereto whereby said first segment upwardly moves a portion of said paper above said lower portion of said opening into operative association with said recording means during said independent pivotal movement of said subassembly.

4,119,975
FACSIMILE CASSETTE WITH WIRE ELECTRODE

John M. Alden, Needham, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed Mar. 21, 1977, Ser. No. 779,763
Int. Cl.[2] G01D 15/28
U.S. Cl. 346—145 9 Claims



1. A cassette for a facsimile recorder including a scanning electrode for marking a web drawn from the cassette, the cassette comprising:

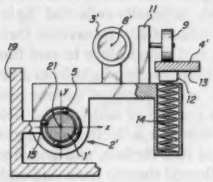
a housing for holding a supply of recording web, the housing forming a web exit path including a lip extending transversely of the web and adapted to oppose a scanning electrode external of the housing, and

a cylindrical, linear recording electrode attached to and supported by the lip adjacent the web path for cooperation with the external scanning electrode.

4,119,976
PHOTOTYPESETTER LENS CARRIAGE ARRANGEMENT

Peter R. Ebner, South Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 25, 1977, Ser. No. 790,713
Int. Cl.[2] B21B 21/00
U.S. Cl. 354—5 20 Claims



1. In a phototypesetter:

a. a carriage having an optical element affixed thereto for translating said optical element parallel to an optical axis;

b. a first way for slidably supporting a first portion of said carriage, said first way being oriented parallel with respect to said optical axis;

c. a second way separated from said first way for slidably supporting a second portion of said carriage, said second way being oriented parallel with respect to said optical axis;

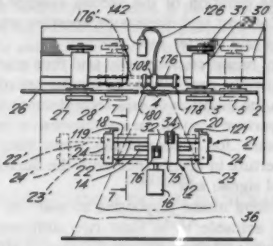
d. carriage support means coupled to said carriage and in contact with said second way for supporting the second portion of said carriage; and

e. mechanical biasing means coupled to said carriage for biasing said carriage support means against said second way to a sufficient extent to eliminate looseness between said carriage support means and said second way, thereby to maintain repeatability of the positioning of said optical element with respect to said optical axis.

4,119,977
PHOTOGRAPHIC TYPE COMPOSING MACHINE

Louis M. Moyroud, 202 Grove Way, Delray Beach, Fla. 33444

Filed Jan. 28, 1977, Ser. No. 763,611
Claims priority, application United Kingdom, Jan. 29, 1976, 3642/76
Int. Cl.[2] G03B 15/00, 17/06, 17/10
U.S. Cl. 354—7 5 Claims

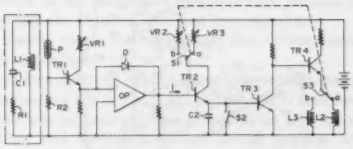


1. A photocomposing device comprising, in combination, a movable character matrix bearing a plurality of arrays of characters, matrix drive means for moving said arrays past a projection station, illuminating means for selectively illuminating said characters, projection means for projecting images of said characters onto a recording surface, spacing means for spacing successive ones of said images on said recording surface in linear groups, control means for detecting the characters in each of said groups, determining the order of projection necessary to prevent reversal of direction by said spacing means during composition of said linear group, and causing said characters to be projected in said order.

4,119,978
PHOTOGRAPHIC CAMERA WITH AUTOMATIC EXPOSURE CONTROL

Toshihiro Kondo, 2-14-3, Kamiishihara, Chofu-shi, Tokyo, Japan, assignor to Toshihiro Kondo, Chofu and Fuji Photo Film Co., Ltd., Minamiashigara, both of, Japan

Filed Sep. 21, 1976, Ser. No. 725,333
Claims priority, application Japan, Sep. 25, 1975, 50-115781
Int. Cl.[2] G03B 7/08
U.S. Cl. 354—38 9 Claims



1. In a photographic camera with automatic exposure control wherein either the shutter speed setting or the diaphragm aperture setting is preselected and the other is automatically controlled thereafter in relation to the preselected setting the improved camera comprising:

time control means for performing arithmetical operations on the indices of exposure control parameters such as scene brightness, film speed, shutter speed and diaphragm aperture, said time control means including capacitive means for producing first and second control signals, the durations of which are functions of said arithmetical operations;

shutter speed setting means for presenting a desired shutter speed;

diaphragm aperture setting means for presetting a desired diaphragm aperture;

first switching means actuable to at least two different posi-

tions which permits the shutter speed preset by said shutter speed setting means or the diaphragm aperture preset by said diaphragm aperture setting means to be selectively connected in circuit with said capacitive means so that when (a) said shutter speed setting is selected, the duration of the first control signal is a function of at least said shutter speed setting to the exclusion of said diaphragm aperture setting and (b) said diaphragm aperture setting is selected, the duration of the second control signal is a function of at least said diaphragm aperture setting to the exclusion of said shutter speed setting;

shutter control means responsive to said time control means for automatically controlling the shutter speed in accordance with the duration of said second control signal;

diaphragm aperture control means responsive to said time control means for automatically controlling the diaphragm aperture in accordance with the duration of said first control signal; and

selector switching means responsive to said first switching means and actuable to at least two different positions which permits said shutter control means or said aperture control means to be selectively connected to said time control means so that when (a) said shutter speed setting is preselected, the diaphragm aperture is automatically controlled in accordance with the duration of said first control signal and (b) said diaphragm aperture setting is preselected and supplied to said time control means, the shutter speed is automatically controlled in accordance with the duration of said second control signal

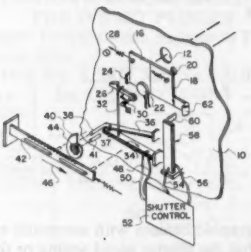
whereby said first control signal is produced during a first voltage change in a predetermined direction across said capacitive means and said second control signal is produced during a second voltage change in said predetermined direction across said capacitive means.

4,119,979

TIMED PIEZOELECTRIC SHUTTER CONTROL FOR CAMERAS

Lee Fitzpatrick Frank, and James Kelly Lee, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,835
Int. Cl.[2] G03B *7/08;* H01V *41/10*
U.S. Cl. 354—50 **10 Claims**



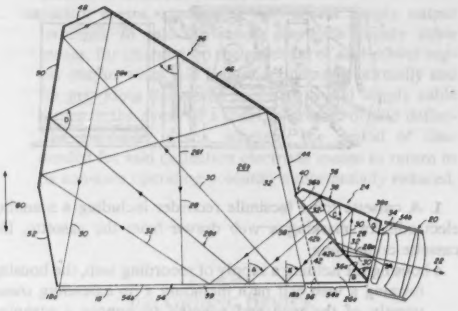
1. In a camera of the type having an exposure aperture, a shutter movable between an aperture-opening position and an aperture-closing position, means for biasing said shutter toward an aperture-closing position, means operable after said shutter is moved to an aperture-opening position for latching said shutter in an aperture-opening position, said latching means being responsive to the application of electrical energy for unlatching said shutter to allow said shutter to move from an aperture-opening toward an aperture-closing position, and means operatively coupled to said latching means for generating electrical energy, the improvement wherein said generating means comprises a piezoelectric generator, and wherein said latching means comprises a piezoelectric motor.

4,119,980

PRISM CAMERA

James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1976, Ser. No. 720,008
Int. Cl.[2] G03B *15/00*
U.S. Cl. 354—130 **6 Claims**



1. A compact camera for producing an image of an object on film having its photosensitive surface coincident with a film plane, said camera having the improvement comprising

A. a housing enclosing an exposure chamber,

B. a lens arrangement mounted on said housing for focusing at said film plane light from within a selected angular field of view, and

C. optical means within said exposure chamber for forming a folded optical path between said lens arrangement and said film plane, said optical means including a prism arrangement having a first surface in lightreceiving optical alignment with said lens arrangement, a second face overlying and spaced from said film plane and in optical alignment with said first surface for receiving and redirecting by total internal reflection light incident along said optical path and entering said prism arrangement through said first surface, at least one additional surface oriented in optical alignment with said second face for receiving and reflecting said internally-reflected light back onto said second face substantially transverse thereto for transmission through said second face to said film plane, said first surface receiving entering light from a first portion of said angular field, said additional surface also receiving light from another portion of said angular field, different from said first portion and reflecting said light from said other portion to said first surface, and said first surface reflects such light reflected thereto from said additional surface to said second face for transmission to said film plane.

4,119,981

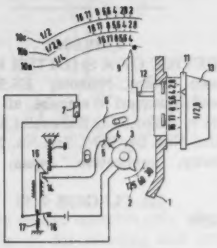
SINGLE LENS REFLEX CAMERA AND EXPOSURE MEASURING MECHANISM THEREFOR

Heinz Schulze, Dresden, German Democratic Rep., assignor to Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, German Democratic Rep.

Filed Mar. 8, 1977, Ser. No. 775,612
Int. Cl.[2] G03B *19/12, 7/20, 17/00*
U.S. Cl. 354—152 **1 Claim**

1. In a single lens mirror relfex camera comprising a housing adapted to receive an interchangeable objective lens of the kind in which light measurement is made with maximum diaphragm setting with subsequent stopping down to the set diaphragm aperture value at the instant of picture taking, incorporating therein an adjustable diaphragm and a diaphragm stop setting device and having extending therefrom a movable coupling element, an exposure measurement circuit within the housing having a photo electric light sensing device arranged in the light path within the camera housing, a control

means within said housing movable by said coupling member to positions in accordance with the diaphragm aperture values set and to an end position outside the aperture setting range on removal of the objective lens, a return spring connected between said control means and a fixed part of said housing to maintain engagement between said control means and said coupling member, the provision of



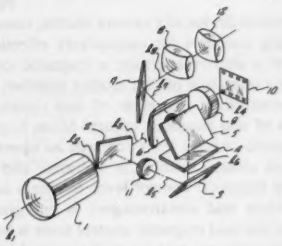
(a) a switch in the circuit of the exposure measurement circuit;
(b) a control slide within the housing capable of opening and closing said switch, and
(c) a lug on said control means cooperating with said control slide to move the latter into a position to open the switch when the control means occupies said end position.

4,119,982

SMALL SIZE SINGLE LENS REFLEX CAMERA

Toshinori Imura, and Maki Yamashita, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1976, Ser. No. 727,357
Claims priority, application Japan, Sep. 29, 1975, 50-116440; Oct. 28, 1975, 50-146121[U]
Int. Cl.[2] G03B *19/12*
U.S. Cl. 354—155 **12 Claims**



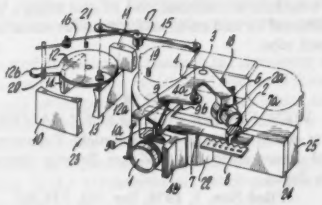
1. A small single lens reflex camera comprising:
a small housing body;
a taking lens assembly attached to the camera body and having an optical path through the camera body including an objective focal lens system and a relay lens assembly;
a movable mirror movably mounted relative to the camera body between a first position intersecting the optical path and a second position not intersecting the optical path, the movable mirror being movably interposed between the objective lens system and the relay lens system, the relay lens assembly further including a first relay lens for focusing the light rays on a film plane; and
a viewfinder optical system attached to the camera body and operatively positioned relative to the first position of the movable mirror to receive light rays from the movable mirror including a focusing surface member for providing an image of an object, a second viewfinder relay lens for focusing the light rays from the object lens system on the focusing surface member, means for magnifying the image and at least three reflecting mirrors, the first and second reflecting mirrors forming an included angle of substantially 90°between their reflecting surfaces and inclined at a predetermined angle relative to the optical path of said taking lens assembly so as to make an angle (β) between an optical axis incident on the first reflecting mirror and an optical axis emitting from the second reflecting mirror, said angle (β) being within the range from 4° to 32°, the third reflecting mirror further transmitting the light rays to the magnifying means, a major angle, α, formed between the reflecting surface planes of the third reflecting mirror and the movable mirror being within the range of $92° < \alpha < 106°$, whereby the viewfinder optical system will comply with the compact design parameter of the camera while providing a relatively large and bright viewfinder image.

4,119,983

SELF-CONTAINED INTERCHANGEABLE LENS CAMERA

Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Azuchimachi, Japan

Filed Nov. 12, 1976, Ser. No. 741,425
Claims priority, application Japan, Dec. 8, 1975, 50-165992; Dec. 8, 1975, 50-165993
Int. Cl.[2] G03B *3/00, 13/02, 13/10*
U.S. Cl. 354—197 **23 Claims**



1. A camera equipped with a lens interchanging device comprising:
a camera body having a picture taking optical axis;
a first lens member having a movable first lens portion for adjusting the focus of said first lens member;
a first lens adjusting means provided on said first lens member and having a first driven portion which is movable so that said movable first lens portion may be moved in response to the movement of said driven portion, thereby adjusting the focus of said first lens member;
a first biasing means for biasing said first driven portion to a starting position;
a second lens member having a movable second lens portion for adjusting the focus of said second lens member;
a second lens adjusting means provided on said second lens member and having a second driven portion which is movable so that said second movable lens portion may be moved in response to the movement of said driven portion thereby adjusting the focus of said second lens member;
a second biasing means for biasing said second driven portion to a starting position;
a lens operating means retaining said first lens member and said second lens member and manually operable so that said lens members may be selectively set between a position offset from said picture taking optical axis and a position on said picture taking optical axis;
a manually operable distance setting member settable to a desired object distance for adjusting the focus of said lens members; and
control means having a first cam portion cooperative with said first biasing means to control the position of said first driven portion in accordance with the setting of said distance setting member, and a second cam portion cooperative with said second biasing means to control the

position of said second driven portion also in accordance with the setting of said distance setting member, said first and second cam portions being respectively brought into operative interconnection with the corresponding driven portion when the corresponding lens member is on said picture taking optical axis

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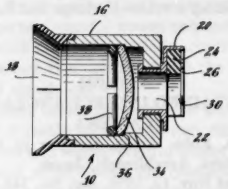
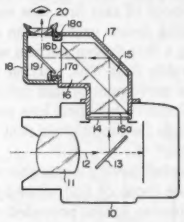
4,119,984
EYEPIECE
Cyril Zajac, P.O. Box 1761, Clifton, N.J. 07015
Filed May 3, 1977, Ser. No. 793,264
Int. Cl.[2] G03B *13/02*; G02B *23/16*
U.S. Cl. 354—219 **4 Claims**



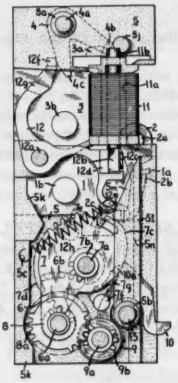
1. An eyepiece for use in conjunction with a viewfinder of a camera comprising a tube, means attached to a first end of said tube rotatably securing said tube to a camera viewfinder, an eye rim attached to a second end of said tube, a prescription lens positioned in said tube and means for securing said lens within said tube.

4,119,985
VIEW FINDER FOR REFLEX CAMERA
Yoshikazu Ando, Musashino, and Junichi Yokozato, Kawagoe, both of Japan, assignors to Zenza Bronica Industries, Inc., Tokyo, Japan
Filed Nov. 1, 1976, Ser. No. 737,567
Claims priority, application Japan, Nov. 4, 1975, 50-150092[U]; Nov. 11, 1975, 50-153079[U]
Int. Cl.[2] G03B *13/02, 19/12*
U.S. Cl. 354—223 **6 Claims**



1. A view finder for a reflex camera in which a mirror is provided in a camera body to reflect light coming through the taking lens thereof at a right angle and a focusing plate is provided at a right angle with respect to the optical axis of the light reflected by the mirror, said view finder comprising a first relecting means provided above the focusing plate of the camera to reflect at a right angle the light from the focusing plate along a path parallel to the optical axis of the taking lens, second reflecting means positioned optically behind said first reflecting means to reflect at a right angle the light from said first reflecting means, means for connecting the second reflecting means to the first reflecting means allowing the second reflecting means to take two positions with respect to the first reflecting means, said two positions being angularly different by 90°, in one of said two positions the second reflecting means reflecting the light from the first reflecting means in the direction parallel to the optical axis of the light reflected by the mirror in the camera, and in the other position the second reflecting means reflecting said light at right angle in the direction at right angle with respect to said direction, and a magnifier located optically behind said second reflecting means, wherein the improvement comprising either said first reflecting means or said second reflecting means having a roof prism to reverse the right and left of the image reflected thereby.

4,119,986
CONTROL DEVICE OF A SHUTTER FOR A CAMERA
Mitsuo Koyama; Ichiro Nemoto; Eiichi Onda; Tadashi Nakagawa, and Masanori Watanabe, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan
Filed Nov. 24, 1976, Ser. No. 744,925
Claims priority, application Japan, Nov. 25, 1975, 50/159495[U]
Int. Cl.[2] G03B *9/58*
U.S. Cl. 354—258 **6 Claims**



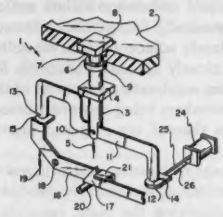
1. A control device of a camera shutter, comprising: opening and closing members for respectively effecting opening and closing of a shutter aperture; a magnetic control lever for controlling operation of said closing member; a control member for controlling operation of said opening member and operation of said magnetic control lever; a spring for urging said magnetic control lever towards an operative position in which said closing member is operated; and an electromagnetic, said magnetic control lever having a magnetic portion which, when said electromagnet is energized, is attracted thereto so that said magnetic control lever is held thereby in an inoperative position; said magnetic control lever and/or said control member having a respective integral flexible portion which, when the control device of the camera shutter is charged, urges said magnetic portion into contact with said electromagnet.

4,119,987
SHUTTER RELEASE MECHANISM
David Easton Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 16, 1977, Ser. No. 797,100
Int. Cl.[2] G03B *17/38*; G05G *1/04*
U.S. Cl. 354—268 **7 Claims**

1. A shutter release mechanism for a camera, comprising:
a motion transmitting lever;
a fulcrum in contact with said lever for pivotally supporting said lever;
a shutter control member mounted for movement by said lever from a restraining position in which shutter actua-

tion is prevented to a releasing position in which shutter actuation is allowed;

means for moving said fulcrum out of contact with said lever to discontinue its pivotal support of said lever; and



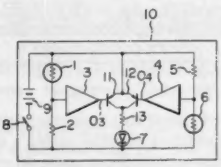
manually operable means, operable only when said fulcrum contacts said lever, for pivoting said lever about said fulcrum to move said shutter control member from its restraining position to its releasing position.

4,119,988

CAMERA USING INSTANT PRINT FILM

Hiroshi Iwata, Nara, and Tetsuo Yamaoka, Osaka, both of Japan, assignors to West Electric Co., Ltd., Osaka, Japan

Filed Sep. 9, 1977, Ser. No. 831,808
Claims priority, application Japan, Sep. 14, 1976, 51-110304
Int. Cl.² G03B *17/50*
U.S. Cl. 354—289 **3 Claims**



1. In a camera using an instant print film of the type wherein an instant print film is loaded, exposed and then immediately developed into a print, an improvement comprising

(a) a temperature sensing circuit including temperature sensing elements for sensing whether or not the environmental temperature is within a permissible temperature range at which a print with satisfactory qualities may be obtained,

(b) a switching circuit which is enabled when the environmental temperature sensed by said temperature sensing circuit is outside of said permissible temperature range,

(c) an indicator circuit including a light emitting element which is electrically connected to said switching circuit in such a way that said light emitting element may light up when said switching circuit is enabled, and

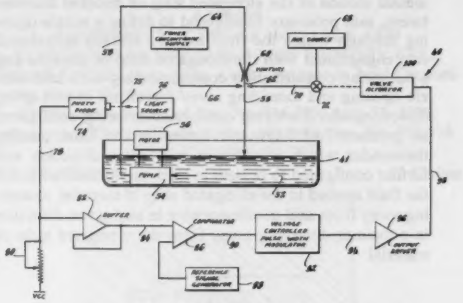
(d) a power supply for said temperature sensing circuit, said switching circuit and said indicator circuit, whereby when the environmental temperature is outside of said permissible temperature range, said light emitting element lights up giving a warning signal.

4,119,989

SYSTEM FOR CONTROLLING CONCENTRATION OF DEVELOPER SOLUTION

Joseph R. Carvalko, Bethel, and Robert J. Tolmie, Jr., Fairfield, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 3, 1977, Ser. No. 756,147
Int. Cl.² G03D *13/00*
U.S. Cl. 354—298 **12 Claims**



1. A system for controlling the concentration of a liquid developer solution, which includes a liquid toner concentrate and a liquid carrier, to be substantially equal to a predetermined concentration in a photocopying apparatus; said system comprising:

A. a source of light directed through the developer solution;

B. photosensor means, on which said source is focused, for generating an output signal proportional to the amount of light transmitted through the developer solution thereto;

C. reference means for generating a reference signal substantially equal to a photosensor means output signal corresponding to the predetermined developer solution concentration;

D. comparator means for comparing said output and reference signals and generating an error signal proportional to the difference therebetween;

E. servo means operable for adding at least one of the toner concentrate and the carrier to the developer solution in response to said error signal;

F. means for periodically enabling said servo means; and

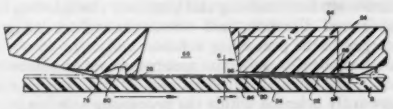
G. means coupled to said comparator and to said periodic enabling means for operating said servo means during each enabling period for a variable interval of time dependent upon said error signal of said comparator whereby relatively small variable amounts of the additive are periodically added to the solution in order to maintain its predetermined concentration.

4,119,990

FLUID APPLICATOR DOCTOR BLADE

Paul B. Mason, Magnolia, and Martin S. Osman, Newton Highlands, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 30, 1977, Ser. No. 811,716
Int. Cl.² G03C *11/00*
U.S. Cl. 354—317 **22 Claims**



1. Fluid coating apparatus comprising:

means for supporting one side of an incremental section of an elongated strip of material;

actuatable means for progressively advancing incremental sections of the elongated strip of material across said support means in a given direction;

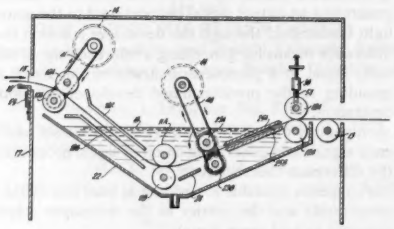
means for depositing a substantially uniform coating of a fluid to the other side of the elongated strip of material as it is progressively advanced across said support means while tending to preclude foreign matter from adversely affecting the uniformity of the fluid coating, said fluid depositing means including a processor adapted to cooperate with said support means to slidably engage an incremental section of the elongated strip of material therebetween, said processor configured to define a nozzle opening through which the fluid may be initially introduced into engagement with the elongated strip of material and a doctoring conformation communicating with said nozzle opening and extending away therefrom in said given direction, said doctoring conformation being configured to produce hydrodynamic forces in the fluid passing thereunder which increase in said given direction and further configured to present at least one surface, adjacent the fluid applied to the elongated strip of material, extending away from said nozzle opening in said given direction in a manner diverging away from the elongated strip of material.

4,119,991

HORIZONTAL ONE STEP AUTOMATIC PLATE PROCESSOR

Peter Vincent Martino, 99-60 65th Rd., Rego Park, N.Y. 11374

Filed Apr. 8, 1977, Ser. No. 785,985
Int. Cl.[2] G03D *3/08*
U.S. Cl. 354—320 **6 Claims**



1. An apparatus for continuously processing, in a horizontal through-put manner, both sides of a printing plate comprising:

a tank for containing the processing solution, said tank having an entry end and a delivery end;

a pair of substantially parallel entry rollers disposed adjacent the entry end of said tank, said rollers being disposed one above the other with the top roller leading the bottom roller to form a downwardly directed nip for receiving the plate and driving it towards the processing solution;

a pair of substantially parallel guidance members which are downwardly oriented and disposed one above the other with the lower end of each member being submerged in the processing solution, the upward ends of said guidance members being outwardly flared, and disposed adjacent the nip of said entry rollers above the processing solution;

a pair of substantially parallel orientation rollers disposed adjacent the lower ends of said guidance members, said orientation rollers being disposed one above the other to form a nip for receiving said plate and transporting it in a horizontal direction, said orientation rollers being submerged in the processing solution;

a substantially flat deflector member disposed adjacent the nip of said orientation rollers, said deflector member being upwardly oriented within the processing solution so as to direct said plate upwardly;

a pair of brush rollers disposed adjacent the deflector member, and one above the other with the top brush roller trailing the bottom brush roller to form an upwardly directed nip for receiving the plate, directing it in an upward direction and scrubbing both sides of said plate, said nip being disposed within the solution such that the plate is fully submerged in the solution as it is being scrubbed, said brush rollers being adapted to rotate at a higher speed than said orientation rollers and entry rollers;

a pair of substantially flat, parallel plate stiffening members disposed closely adjacent said brush rollers, one above the other in a closely spaced relationship for preventing the brushes from accelerating the travel of the plate, said plate stiffening members being upwardly oriented such that the upper ends thereof are disposed above the processing solution;

a pair of squeege rollers disposed adjacent the trailing end of said plate stiffening members, one above the other to form a nip for receiving the plate, removing excess solution from the plate, and transporting the plate in a horizontal direction towards the delivery end of the tank;

means for rotating said entry rollers, orientation rollers, and squeege rollers at substantially the same speed;

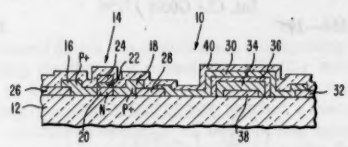
and means for rotating said brush rollers at a speed greater than that of said entry rollers, orientation rollers, and squeege rollers.

4,119,992

INTEGRATED CIRCUIT STRUCTURE AND METHOD FOR MAKING SAME

Alfred Charles Ipri, and Joseph Hurlong Scott, Jr., both of Princeton, N.J., assignors to RCA Corp., New York, N.Y.

Filed Apr. 28, 1977, Ser. No. 791,945
Int. Cl.[2] H01L *27/12*
U.S. Cl. 357—4 **9 Claims**



1. An integrated circuit structure comprising:

(a) a body of insulating material having a surface on which a single crystal semiconductor material may be epitaxially grown;

(b) at least one pair of spaced conductors on the surface of said body; and

(c) at least one semiconductor device formed of a single crystal semiconductor material epitaxially grown on said insulating material comprising:

(i) a pair of spaced semiconductor regions having a first conductivity type formed on the surface of said body, one of said spaced semiconductor regions at least partially overlying one of said pair of spaced conductors and the other of said spaced semiconductor regions at least partially overlying the other of said pair of spaced conductors;

(ii) a channel region comprising a single crystal semiconductor region lying between and adjacent to each of said spaced semiconductor regions, said channel region overlying said surface of said body;

(iii) an insulating region overlying said channel region; and

(iv) a conductive gate region overlying said insulating region.

4,119,993

GAAS MOSFET

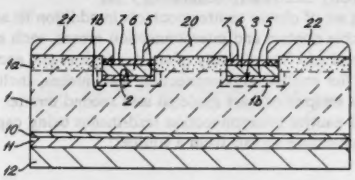
Hans Ludwig Hartnagel, and Burhan Bayraktaroglu, both of New castle-upon-Tyne, England, assignors to National Research Development Corporation, London, England

Filed Dec. 30, 1976, Ser. No. 755,845

Claims priority, application United Kingdom, Jan. 16, 1976, 1738/76

Int. Cl.[2] H01L 29/78

U.S. Cl. 357—23 11 Claims



1. A method of making a GaAs mosfet, the method comprising forming two grooves in a surface of a p-type gallium arsenide single crystal, depositing in each groove a layer of indium, depositing over the indium in each groove a layer of dopant, depositing over the dopant a layer of aluminium, anodically oxidising the surface of the work until all the aluminium is oxidised to Al_2O_3 and the gallium arsenide is oxidised to a depth contiguous to the dopant, annealing the work to form an n^+ layer in the gallium arsenide under the grooves and contiguous with the anodically oxidised gallium arsenide, in any order depositing contact metal (i) covering substantially all the anodically oxidised gallium arsenide between the grooves and in contact with both of the layers of Al_2O_3, (ii) covering the anodically oxidised gallium arsenide on the remaining side of one groove and in contact with the Al_2O_3 of that one groove, and (iii) covering the anodically oxidised gallium arsenide on the remaining side of the other groove, and rendering electrically conductive Al_2O_3 between the dopant and the contact metal (ii) and (iii).

11. A GaAs mosfet produced by the method of claim 1.

4,119,994

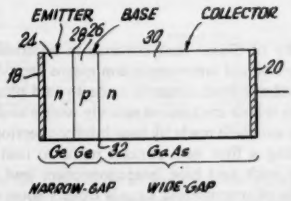
HETEROJUNCTION AND PROCESS FOR FABRICATING SAME

Faquir Chand Jain, Storrs, and Mahmoud Ahmed Melehy, Baltic, both of Conn., assignors to University of Connecticut, Storrs, Conn.

Continuation-in-part of Ser. No. 434,707, Jan. 18, 1974, abandoned. This application Aug. 14, 1975, Ser. No. 604,794

Int. Cl.[2] H01L 29/267, 29/205

U.S. Cl. 357—16 6 Claims



1. A semiconductor heterotransistor comprising a collector region of a wide-gap semiconductor material of one conductivity type and a base region of a narrow-gap semiconductor material of an opposite conductivity type immediately contiguous thereto and defining a p-n heterojunction therewith, said base region being contiguous to an emitter region on the opposite side of the base-collector heterojunction and defining a p-n homojunction therewith, said emitter region being formed of the same narrow-gap semiconductor material as said base region, said base and emitter regions being of opposite conductivity types, the doping level of said emitter region being higher than that in said base region, the doping level in said collector region being less than in said base region, said wide-gap collector and said narrow-gap base regions and the heterojunction therebetween forming a continuous single crystalline structure.

4,119,995

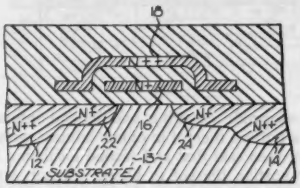
ELECTRICALLY PROGRAMMABLE AND ELECTRICALLY ERASABLE MOS MEMORY CELL

Richard T. Simko, Los Altos, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 716,790, Aug. 23, 1976, abandoned. This application Mar. 17, 1977, Ser. No. 778,574

Int. Cl.[2] H01L 29/78

U.S. Cl. 357—23 12 Claims



1. An electrically programmable and erasable MOS storage device disposed on a substrate comprising:

spaced-apart source and drain regions in said substrate defining a channel;

a floating gate disposed above said channel;

a first gate disposed above said channel and said floating gate;

a second gate disposed over at least a portion of said floating gate and spaced-apart from said first gate;

said floating gate having a surface texture with radii of curvature between 25A and 75A for providing an enhanced electric field between said floating gate and said second gate such that electrons from said floating gate may be transferred to said second gate;

whereby, by the application of potentials to said first gate and said drain region charge may be injected into said floating gate and whereby, by the application of a potential to said second gate charge may be removed from said floating gate.

4,119,996

COMPLEMENTARY DMOS-VMOS INTEGRATED CIRCUIT STRUCTURE

Murzban D. Jhabvala, Seabrook, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 20, 1977, Ser. No. 817,413

Int. Cl.[2] H01L 29/78

U.S. Cl. 357—23 16 Claims

1. A metal oxide semiconductor transistor comprising:

a region of a first semiconductivity type;

a V-notch extending into said region;

a first doped layer abutting said region and a portion of a first edge of said V-notch, said first layer being of a second conductivity type;

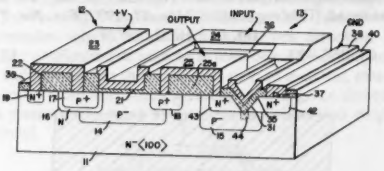
a second doped layer having a portion thereof abutting said region and a portion of a second edge of said V-notch, said second layer being of said first conductivity type and having a carrier concentration greater than said region;

a third doped layer abutting said second layer remote from said region and abutting another portion of said second edge of said V-notch, said third layer being of said second conductivity type;

a first insulating layer abutting said region and said first, second, and third layers in contact with said first and second edges of said V-notch, said first insulating layer further contacting portions of said first and third layers remote from said V-notch;

a second insulating layer spaced from said first insulating layer and abutting another portion of said third layer remote from said V-notch and abutting a portion of said second layer remote from said V-notch;

a first electrode in ohmic contact with another portion of said first layer remote from said V-notch;



a second electrode covering said second insulating layer having a portion thereof in ohmic contact with said third layer between said first and second insulating layers and another portion thereof in ohmic contact with another portion of said second layer remote from said V-notch;

a third electrode abutting said first insulating layer;

said region having a relatively low impedance from said first layer, along said first edge of said V-notch, around the apex of said V-notch, and along said second edge of said V-notch to said second layer in response to a zero bias being applied to said third electrode; and

said second layer forming a stopping channel therethrough to electron conductance during said zero biasing and forming a short channel length electron conductance path therethrough with fast response time in response to a positive bias being applied to said third electrode.

4,119,997

DOT-AND LOGIC GATE DEVICE INCLUDING MULTIEMITTER TRANSISTOR

David E. Fulkerson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 670,811, Mar. 26, 1976, Pat. No. 4,032,796, and a continuation-in-part of Ser. No. 497,018, Aug. 13, 1974, Pat. No. 3,970,866. This application Apr. 20, 1977, Ser. No. 789,036

Int. Cl.² H01L *29/72*

U.S. Cl. 357—36 **7 Claims**

1. A monolithic integrated circuit provided in a semiconductor material for performing logical functions including a "DOT—AND" function, said integrated circuit comprising:

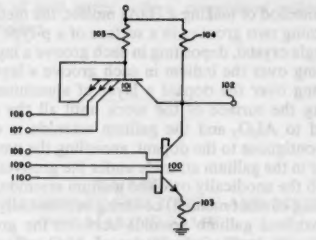
a plurality of isolated regions in said semiconductor material, each of a first conductivity type and of a first conductivity, including a first isolated region;

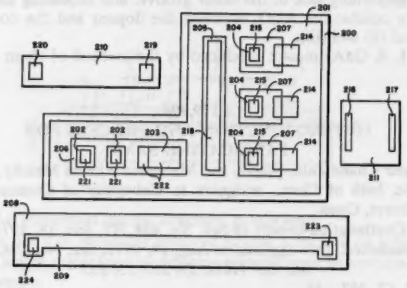
a plurality of base regions of a second conductivity type, each located entirely within said first isolated region, including first and second base regions, there being first and second base junctions between said first and second base regions and said first isolated region, respectively, whereby said first isolated region serves as a common collector region with respect to both said first and second base regions;

a plurality of emitter regions of said first conductivity type and of a second conductivity, each located within one of said plurality of base regions, including first and second emitter regions located in said first base region and including a third emitter region located within said second base region, there being first and second emitter junctions between said first and second emitter regions and said first base region, respectively, and there being a third emitter junction between said third emitter region and said second base region;

a first double contact and interconnection means made across said first emitter junction between said first emitter region and said first base region, said double contact and interconnection means being in ohmic contact with both said first base region and said first emitter region, whereby said first emitter region and said first base region are directly electrically connected;

a first set of ohmic emitter contacts in addition to said first double contact and interconnection means, each made to one of said first plurality of emitter regions and each made by the emitter interconnection lead means, including a first emitter contact made to said second emitter region, said emitter interconnection lead means being capable of transmitting signals from a source;





a plurality of ohmic base contacts in addition to said first double contact interconnection means each of said plurality of ohmic base contacts made to said plurality of base regions which are located entirely within said first isolated region and each made by base interconnection lead means, including a first base contact made to said second base region with said base interconnection lead means being capable of transmitting signals from a source;

an ohmic collector contact made to said first isolated region;

a first resistive means connectng said first double contact and interconnection means with a first voltage supply interconnection lead means adapted for energization from a voltage supply; and

a second supply interconnection means connecting said third emitter region and a second voltage supply interconnection lead means adapted for energization by a voltage source.

4,119,998

INTEGRATED INJECTION LOGIC WITH BOTH GRID AND INTERNAL DOUBLE-DIFFUSED INJECTORS

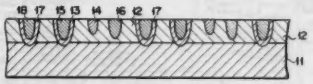
Yukuya Tokumaru; Masanori Nakai; Satoshi Shinozaki; Junichi Nakamura; Shintaro Ito, and Yoshio Nishi, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 644,292, Dec. 24, 1975, abandoned. This application Jul. 14, 1977, Ser. No. 815,768

Claims priority, application Japan, Dec. 27, 1974, 49-148562; Dec. 27, 1974, 49-148563

Int. Cl.[2] H01L 27/04

U.S. Cl. 357—44 2 Claims



1. An integrated injection logic semiconductor device comprising a semiconductor substrate of one conductivity type, a layer of the opposite conductivity type to said one conductivity type laminated on said semiconductor substrate of one conductivity type, a first one conductivity type region formed penetrating through said opposite conductivity type layer to reach said one conductivity type semiconductor substrate, a second one conductivity type region formed in said opposite conductivity type layer, an opposite conductivity type region formed in said first one conductivity type region, a separating region formed of material of said one conductivity type and penetrating through said opposite conductivity type layer and surrounding said first and second one conductivity type regions, and an additional region of said opposite conductivity type formed in said separating region whereby said opposite conductivity type region, said first one conductivity type region and said opposite conductivity type layer constitute a lateral transistor of one polarity type; and said one conductivity type semiconductor substrate, said opposite conductivity type layer and said second one conductivity type region constitute a lateral transistor of the opposite polarity type.

4,119,999

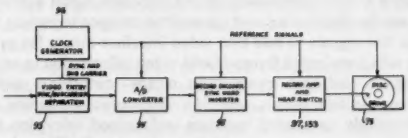
APPARATUS FOR INSERTING A DIGITAL SYNC WORD, PHASE-SYNCHRONIZED TO THE COLOR SUBCARRIER, IN PLACE OF THE HORIZONTAL SYNC SIGNAL

Luigi C. Gallo, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 28, 1977, Ser. No. 763,941

Int. Cl.[2] H04N 9/44, 5/78, 9/32

U.S. Cl. 358—4 7 Claims



1. Apparatus for processing an analog color video information signal for recording on a magnetic media so that accurate reproducing of the signal can be carried out, comprising:

means for removing the horizontal synchronization pulses from the analog video information signal;

means for sampling said analog video information signal and converting the samples to at least one digital data stream having a predetermined data rate that is a multiple of the chrominance subcarrier frequency;

means for inserting a unique digital synchronization word into said horizontal blanking interval on at least alternate ones of successive video lines, said synchronization word being synchronized relative to the chrominance subcarrier so that the phase relationship between said synchronization words and said subcarrier is constant.

4,120,000

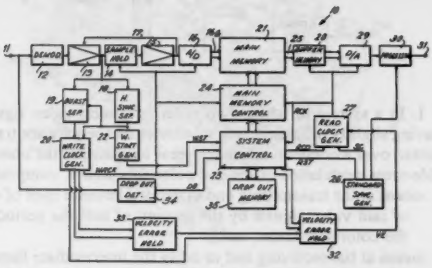
VIDEO TIME BASE CORRECTOR

Takeshi Ninomiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 703,650, Jul. 8, 1976, Pat. No. 4,054,903. This application Jul. 20, 1977, Ser. No. 817,662

Int. Cl.[2] H04N 5/76

U.S. Cl. 358—8 7 Claims

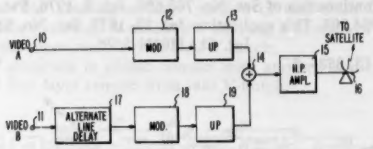


1. A time base corrector for removing time base errors from video signals comprising: main memory means including a plurality of memory units each having a capacity sufficient to store a predetermined whole number of line intervals of the video signals; input means for receiving the video signals; write clock generating means coupled to said input means for generating write clock pulses at a variable rate dependent upon time base errors in the incoming video signals; read clock generating means for generating read clock pulses at a rate which is standard at least at the beginning and end of each standard line interval of the video signals; main memory control means for selectively enabling said memory units to write therein the video signals received from said input means at a clocking rate determined by said write clock pulses, and for selectively enabling said memory units to read out therefrom, at a clocking rate determined by said read clock pulses, the video signals written in said memory units; output means for receiving the video signals selectively read out from said memory units; system control means including write addressing means generating write addresses of said memory units in a repeating cyclic order for causing said main memory control means to selectively enable said memory units in said repeating cyclic order for the writing therein of the video signals received from said input means, and read addressing means generating read addresses for causing said main memory control means to selectively enable the thereby read addressed memory units for the reading-out of the video signals stored therein, with each memory unit thus addressed for reading-out being different from the memory unit then addressed for writing; and velocity error memory means having a plurality of addresses respectively corresponding to said memory units and including means responsive to said write addressing means of the system control means for selectively writing, at said addresses, velocity error information in respect to velocity errors occurring in the video signals as written in the respective memory units, and means responsive to said read addressing means of the system control means for selectively reading-out the velocity error information from the address of said velocity error memory means which corresponds to the one of said memory units then enabled for said reading-out of the video signals therefrom; and in which said read clock generating means includes means for modulating said read clock pulses with the velocity error information being read-out from said velocity error memory means.

4,120,001
SYSTEM FOR PASSING TWO COLOR TV SIGNALS THROUGH NON-LINEAR PATH

Liston Abbott, Hightstown; Guy Ward Beakley, Princeton Junction, and Robert Earl Flory, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 17, 1976, Ser. No. 751,795
Int. Cl.[2] H04N 9/00
U.S. Cl. 358—11 5 Claims



1. In a system in which two color television video signals having slightly different color subcarrier frequencies are transmitted over a common channel, means to minimize the observable cross modulation of the two color subcarriers, comprising

means at the transmitting end to delay alteranate lines of one of said video signals by the amount of half the period of the color subcarrier, and

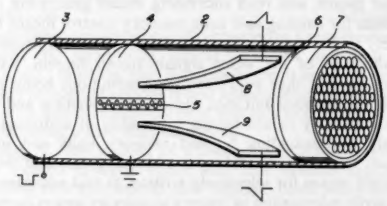
means at the receiving end to delay the intermediate lines of said one video signal by the amount of half the period of the color subcarrier,

whereby the cross modulation of the color subcarrier in each video signal by the subcarrier in the other video is translated to fluctuations occurring at too high a rate to be visible on televison monitors and receivers.

4,120,002
STREAK CAMERA TUBE

Albert J. Lieber, Los Alamos, N. Mex., assignor to General Engineering & Applied Research, Inc., Palo Alto, Calif.

Continuation of Ser. No. 608,379, Aug. 27, 1975, abandoned.
This application Dec. 29, 1976, Ser. No. 755,226
Int. Cl.[2] H04N 5/32
U.S. Cl. 358—111 18 Claims

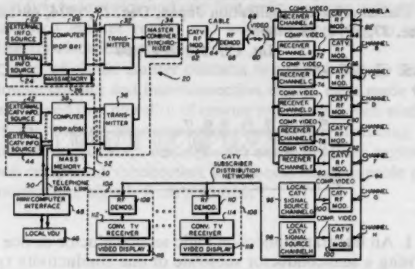


1. A streak camera image tube comprising a photocathode for receiving short duration photon images and converting them to photoelectrons, a passive collimator immediately adjacent the emission side of said photocathode, a phosphor screen for receiving said photoelectrons, and deflections electrode means adjacent the path of said photoelectrons between said passive collimator and said phosphor screen for deflecting said photoelectrons from their direction of movement across the phosphor screen.

4,120,003
MULTIPLE CHANNEL CATV SYSTEM UTILIZING ROW GRABBER INTERFACE AS CATV INPUT

David S. Mitchell, Huntington, and Robert H. Nagel, New York, both of N.Y., assignors to IDR, Inc., Farmingdale, N.Y.

Filed Jan. 21, 1977, Ser. No. 761,611
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—142 38 Claims



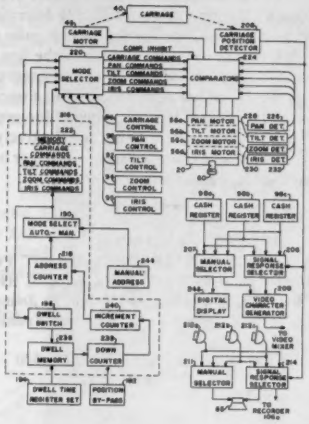
1. In a CATV type television system having a first common CATV television signal distribution means for distributing a plurality of selectable video displayable television signal channels of different video information content to a plurality of subscriber normal television multichannel video display devices capable of receiving said plurality of channels for providing said selectable video display, and first transmitting means operatively connected to said first common CATV television signal distribution means for providing said plurality of different channels to said first common CATV television signal distribution means; the improvement comprising a real time frame grabbing system for substantially instantaneously providing a selectable continuous video displayable frame or video information to a first video interface means for providing a preselected continuous video displayable frame of said information to at least one of said channels as said video information content thereof from continuously transmittable information, said real time frame grabbing system comprising second means for transmitting said video information as a plurality of pseudo video scan lines, each of said pseudo video scan lines having a television video scan line format and capable of comprising a complete self-contained packet of digital information sufficient to provide an entire displayable row of video data characters, said pseudo video scan line having an associated transmission time equivalent to said television video scan line, said packet of digital information comprising at least address information for said displayable row and data information for said displayable characters in said displayable row, said pseudo video scan line being a composite video signal, said real time frame grabbing system further comprising second television signal distribution means for distributing said transmitted composite pseudo video scan line signals to said first video interface means for providing said preselected frame of said video information to said one channel, said first transmitting means comprising said first video interface means, said first video interface means being operatively connected between said second television signal distribution means and said first common CATV television signal distribution means for processing said distributed composite pseudo video scan line signals for providing a video displayable row from each of said pseudo video scan line signals pertaining to said preselected frame for providing a selected continuous video displayable frame of dedicated information to said one channel, a predetermined plurality of said displayable video rows comprising a displayable video frame of information, whereby a plurality of CATV subscribers may receive a dedicated common channel of preselected frame grabbable information on a normal television signal channel over said CATV television signal distribution means.

4,120,004

SURVEILLANCE SYSTEM

John M. Coutta, 450 Superior Ave., Decatur, Ga. 30030

Continuation-in-part of Ser. No. 652,631, Jan. 26, 1976, Pat. No. 4,027,329. This application Apr. 11, 1977, Ser. No. 786,447
Int. Cl.[2] H04N 7/18
U.S. Cl. 358—108 11 Claims



1. A surveillance system comprising:

an elongated carrige track positioned along a path;

a carriage adapted to be supported by and be movably operated along said track;

electrically energized drive means for positioning said carriage along said track;

a television camera supported by said carriage and positioned to view regions on at least one side of said track, and including electrically responsive camera adjustment means for adjusting at least one of the following camera functions: azimuth, tilt, zoom, and iris;

light attenuating means, including a partially opaque cover extending from end to end of said track, enabling camera viewing through one partially opaque thickness of cover for blocking light transmission in through one region of said cover and out through another region of said cover, whereby the outlines of said camera and said carriage are obscured;

display means for displaying the output of said camera; and operating means comprising:

carriage control means for selectively operating said drive means for selectively positioning said camera along said track, and

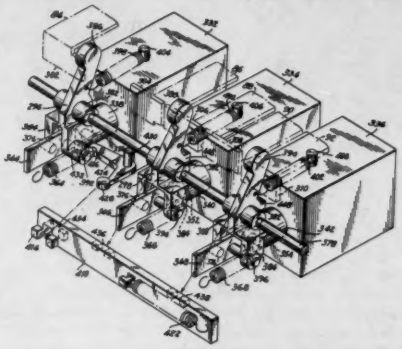
camera control means for providing electrical signals to and selectively operating said camera adjustment means, wherein said carriage control means includes means for selectively providing a plurality of discrete memory address signals, a signal means responsive to said discrete address signal for providing a location command signal to said drive means, whereby said carriage is positioned at selected positions; wherein said camera control means includes camera memory means responsive to signals from said address means for providing selected camera control signals to said camera adjustment means for selectively varying at least one of said camera functions, whereby upon the occurrence of a said memory address signal, said carriage is moved to a selected location, and at least one of said camera adjustments is adjusted for that carriage location to view a particular scene.

4,120,005

MODE SELECTING DEVICE FOR TAPE RECORDING AND/OR REPRODUCING APPARATUS

Kenichi Amano; Yutaka Suzuki, and Yoshio Kishi, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1977, Ser. No. 776,478
Claims priority, application Japan, Mar. 10, 1976, 51-26513
Int. Cl.[2] G11B 15/12; B41J 23/34
U.S. Cl. 360—61 8 Claims



1. A mode selecting device for a tape recording and/or reproducing apparatus comprising: a plurality of mode selecting push-button members which are selectively actuable from rest positions to active positions for selecting corresponding operating modes of the apparatus, a plurality of electrically energizable driving means, circuit means for selectively energizing one or more of said driving means responsive to the actuation of a selected one of said push-button members, an operating member associated with each said driving means and being movable from an inoperative position to an operating position in response to the energizing of the associated driving means, a plurality of transmission members selectively engageable by selected ones of said operating members and movable between a first position and a second position when said operating member engaged therewith is moved from its inoperative position to its operative position, movement of selected ones of said transmission members from said first position to said second position being operative to establish the corresponding operating mode of the apparatus as determined by the selectively actuated push-button member the number of said driving means being less than the number of said transmission members, and means operable by one of said driving means for shifting the operating member associated with at least another of said driving means from effective engagement with one of said transmission members to effective engagement with another of said transmission members.

4,120,006

RANDOM ACCESS RECORDING AND/OR PLAYBACK SYSTEM

Masaru Nagami, Yokohama; Kenji Hori, Tokyo; Hiromu Masaoka, Yokohama, and Yoshio Kishi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 6, 1977, Ser. No. 785,180
Claims priority, application Japan, Apr. 9, 1976, 51-39869
Int. Cl.[2] G11B 5/09
U.S. Cl. 360—72 18 Claims

1. A random access system for recording and/or reproducing apparatus of the type used for recording information on and/or reproducing information from selectable portions of a record medium, said record medium having address signals selectively recorded thereon to identify corresponding ones of said selectable portions, said address signals including a number of address pulses plus a constant pulse number, said random

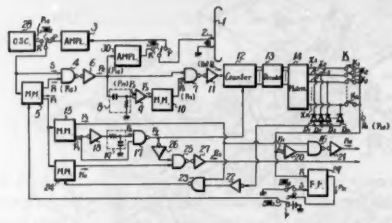
access system being operable to access selectable portions of said record medium and comprising:

detecting means for detecting said address signals recorded on said record medium;

counting means coupled to said detecting means for counting said address pulses to derive a count corresponding to the address of a respective portion of said record medium;

selecting means for selecting any one of said selectable portions of said record medium;

comparing means coupled to said counting means and to said



selecting means for comparing the count derived by said counting means to the selectable portion selected by said selecting means and for producing a coincidence signal when said count corresponds to the selected portion;

sensing means for sensing the end of an address signal detected by said detecting means; and

control signal generating means responsive to said coincidence signal when the end of said address signal is sensed for generating a control signal to initiate a predetermined operation of said recording and/or reproducing apparatus.

4,120,007

HEAD SWITCHING CONTROL APPARATUS FOR USE IN A VIDEO SIGNAL PROCESSING SYSTEM

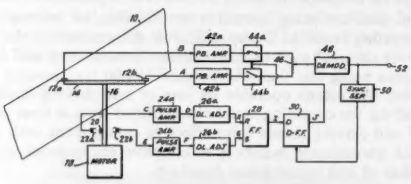
Ichitaro Sato, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 18, 1977, Ser. No. 770,236

Claims priority, application Japan, Feb. 18, 1976, 51-17104[U]

Int. Cl.[2] G11B *15/14*

U.S. Cl. 360—64 **6 Claims**



1. In video signal processing apparatus of the type comprising plural rotary record and/or playback transducers heads for scanning successive tracks across a recording medium, each track having recorded therein a composite video signal comprised of video information, horizontal synchronizing signals and a vertical blanking interval containing equalizing pulses, vertical synchronizing pulses and horizontal synchronizing pulses, head switching control apparatus for selectively connecting individual transducer heads, one at a time, to video signal receiving means, comprising: position pulse generating means for generating position pulses representing the relative positions of said transducer heads with respect to said recording medium; bi-state means having first and second states and responsive to successive position pulses applied thereto for switching between said first and second states as said transducer heads rotate into predetermined position with respect to said recording medium; video signal receiving means; switch means coupled to said transducer heads for electrically connecting individual ones of said heads to said video signal receiving means; synchronizing signal separator means coupled to said video signal receiving means for separating from said video signal the equalizing pulses, vertical synchronizing pulses and horizontal synchronizing pulses included in said vertical blanking interval; switch pulse generating means coupled to said synchronizing signal separator means to receive at least the equalizing pulses separated from said video signal and responsive to said first and second states of said bi-state means for generating a switch pulse whose state is determined by the state of said bi-state means and which switch pulse is synchronized to switch to said determined state by the first equalizing pulse which is received by said switch pulse generating means after said bi-state means has been switched to a respective one of said first and second states; and means for applying said switch pulses to said switch means for selectively actuating said switch means so as to connect said transducer heads one at a time to said video signal receiving means.

4,120,008

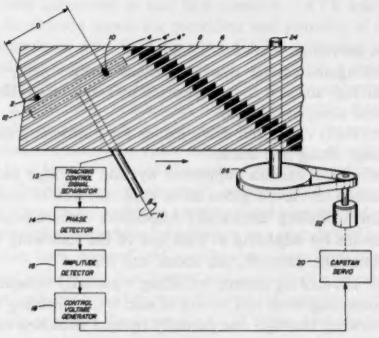
OVERLAP TRACK SERVO FOR DYNAMIC POSITION CORRECTION IN A ROTARY-HEAD TAPE RECORDER

Lenard M. Metzger, Rochester, and Robert B. Johnson, Scottsville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 5, 1976, Ser. No. 729,620

Int. Cl.[2] H04N *5/795*

U.S. Cl. 360—70 **5 Claims**



1. Apparatus for use in a magnetic tape player for aligning the path of a rotating playback head that generates a playback signal with a magnetic track helically recorded across the width of a magnetic tape having a plurality of such helical tracks recorded thereon, the apparatus comprising:

means for supporting the playback head for rotation opposite said helical tracks;

track sensing means mounted on said supporting means in fixed rotational association with the playback head, said track sensing means overlapping first and second adjacent ones of said helical recorded tracks on the magnetic tape for continuously reproducing a train of signals simultaneously with the playback signal, said train including first and second signal components from said first and second adjacent tracks respectively, said track sensing means defining a first overlapping position for producing said train of signals with said first and second signal components having a reference relationship when the playback head is aligned with one of said recorded tracks, said track sensing means defining a plurality of other overlapping positions corresponding to a plurality of misalignments between the playback head and said one recorded track, each said other overlapping position producing said train of signals with said first and second signal components

having a corresponding relationship that differs from said reference relationship;

circuit means connected to said sensing means for detecting said signal components and for identifying said first and second signal components as originating from said first and second adjacent tracks, respectively;

means responsive to said first and second signal components for providing a tracking control signal that varies dependent upon the relative presence of said first and second signal components in said train of signals;

tape driving means for moving the tape through a path in the tape recorder; and

servo means responsive to said tracking control signal for causing said tape driving means to maintain a tape movement that has said one recorded track aligned with the path of the moving playback head.

4,120,009

TAPE RECORDER APPARATUS

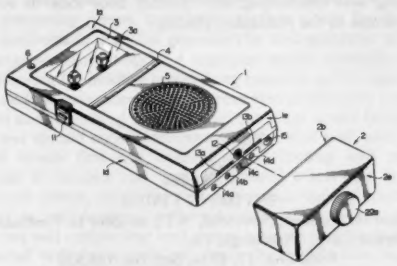
Teruo Iwasawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jun. 13, 1977, Ser. No. 806,169

Claims priority, application Japan, Jun. 25, 1976, 51-83695

Int. Cl.[2] G11B *31/00*

U.S. Cl. 360—71 **10 Claims**



1. A tape recorder apparatus comprising a tape recorder internally housing a power source, a tape drive system and a pause switch for selectively controlling energization of the drive system, and an adaptor including means for releaseable electrical connection with the tape recorder without the use of an electrical cord and automatic switch means for controlling the operation of the tape recorder, said switch means and said pause switch being connected in parallel with each other between the power source and the tape drive system, whereby when the adaptor is connected with the tape recorder, the pause switch may be moved to an off position to permit the drive system of the tape recorder to be controlled by the automatic switch means.

4,120,010

AIR BEARING HEAD SUPPORT

Yasunaga Mitsuya, Tokyo; Shigemitsu Oguchi, Sayama; Wataru Hayakawa, Odawara; Hatsuo Takahashi, Chigasaki; Gen-ichi Ishida, Machida, and Masayoshi Amasaka, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Public Corp.; Hitachi, Ltd. and Fujitsu Limited, all of, Japan

Filed May 25, 1977, Ser. No. 800,178

Claims priority, application Japan, May 27, 1976, 51-61816

Int. Cl.[2] G11B *5/60, 21/20, 21/22, 21/02*

U.S. Cl. 360—103 **17 Claims**

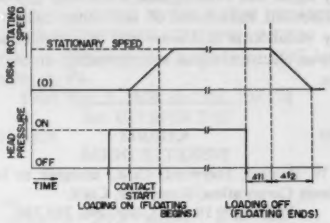
1. A magnetic disk unit comprising:

(a) floating magnetic head support means for supporting a floating magnetic head by a gimbal fixedly provided in an opening and urging the floating magnetic head against the surface of a magnetic disk at a predetermined pressure by a load spring provided in the opening;

(b) carriage means for moving the floating magnetic head support means radially of the magnetic disc;

(c) control means for actuating the load spring to apply the urging force to the floating magnetic head in response to movement of the floating magnetic head by the carriage means in a first direction radial of the magnetic disk and for putting the load spring out of its actuated state to move the urging force from the floating magnetic head in response to the movement of the floating magnetic head in a second direction;

(d) means for moving the floating magnetic head by the carriage means in the first direction, applying the urging



force to the floating magnetic head by the control means to bring the floating magnetic head into contact with the magnetic disc surface, starting the magnetic disc to revolve and raising its revolving speed up to a steady-state value to lift the magnetic head at the start of operation of the magnetic disc unit; and

(e) means for moving the floating magnetic head by the carriage means in the second direction, removing the urging force from the floating magnetic head by the control means to raise the floating magnetic head from the rotating magnetic disc surface and stopping the magnetic disc at the time of stopping the operation of the magnetic disc unit.

4,120,011

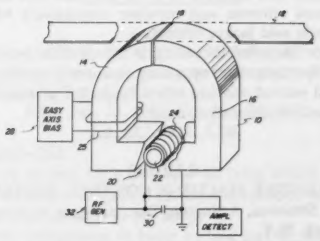
MAGNETIC HEAD EMPLOYING EASY AXIS THIN FILM INDUCTOR

Frederick John Kolb, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1977, Ser. No. 835,106

Int. Cl.[2] G11B *5/30*

U.S. Cl. 360—111 **4 Claims**



1. Magnetic head apparatus for use in detecting signal flux comprising:

a. first and second magnetic pole pieces disposed to form a transducer gap and a back gap therebetween;

b. wedge-like means at said back gap for providing a gradually changing reluctance across said back gap;

c. elongated sense element means within said back gap, said sense element means having an essentially single domain magnetic film thereon, said film being magnetically cou-

pled to said pole pieces for completing a magnetic circuit comprising said pole pieces, said transducer gap, and said film, said film being so disposed on said sense element means that the easy axis of said film is about the longitudinal axis of said sense element means and also substantially parallel to said transucer gap, said sense element means being disposed within said back gap said head apparatus being adapted to have a bias field applied across said back gap, the field extending across said back gap being applied differentially to the easy axis of said film; and

d. a sense coil inductively coupled to the easy axis of said sense element means;

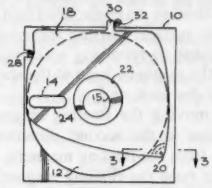
whereby signal flux entering said transducer gap correspondingly causes the inductance of said sense coil to vary, and whereby variation in said sense coil inductance may be converted to an electrical signal corresponding to said inductance variation.

4,120,012

DISKETTE DOOR

George W. Bowers, Hayward, Calif., assignor to Information Terminals Corporation, Sunnyvale, Calif.

Filed Apr. 18, 1977, Ser. No. 788,286
Int. Cl.[2] G11B *23/02*; B65D *85/30*
U.S. Cl. 360—133 **8 Claims**



1. A removeable diskette for use in conjunction with a diskette receiving magnetic storage equipment which has a magnetic transducer head, and which has operating means positioned to engage the diskette, comprising:

a magnetically coated disk;

a substantially rectangular jacket enclosing the disk, said jacket having an opening to afford access to a disk surface for the magnetic transducer head;

a door member movably positioned within said jacket beside said disk;

means pivotally mounting said door member in said jacket, to enable said member to pivot between first and second positions wherein said member respectively blocks and unblocks said jacket opening;

said door member including a tab portion positioned to directly engage said operating means and move said cover to said second position when the jacket is installed on the magnetic storage equipment.

4,120,013

LAUNDRY MACHINE CONTROL SYSTEM

James W. Simmons, Arlington, Tex., assignor to Ametek, Inc., New York, N.Y.

Filed Mar. 28, 1977, Ser. No. 781,650
Int. Cl.[2] D06F *37/42*
U.S. Cl. 361—180 **15 Claims**

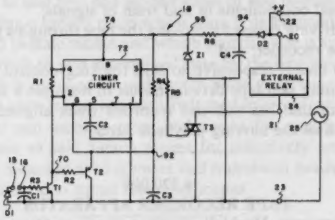
1. A system for controlling a door lock to allow access to a rotatable cylinder only with said cylinder stationary, comprising:

magnetic means having a magnetic field and an induction coil for sensing rotational motion of said cylinder at velocities greater than a predetermined minimum rotational velocity to induce a pulse signal in said coil in response to the flux of said magnetic field as said cylinder rotates at velocities greater than said predetermined minimum rotational velocity;

circuitry means in electrical communication with said magnetic means for amplifying the pulse signal and for converting the signal to a DC control signal;

delay means in electrical communication with said circuitry means for maintaining the DC control signal for a predetermined period of time after the pulse signal ceases, said predetermined period of time being sufficient to enable the cylinder to transition from said predetermined minimum rotational velocity to a stationary position; and

switch means responsive to the DC control signal for actuating and deactuating the cylinder door lock to control access to the rotatable cylinder.

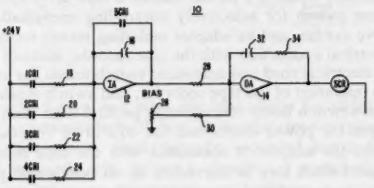


4,120,014

DIVIDING TIMER

William H. Snedden, Newstead, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 27, 1976, Ser. No. 735,920
Int. Cl.[2] H01H *47/18*
U.S. Cl. 361—196 **1 Claim**



1. A dividing timer comprising:

a. a first operational amplifier connected as an integrator and having a first capacitor in its feedback path;

b. a plurality of resistors in parallel, connected to the input of said first operational amplifier and to a source of d.c. potential, the resistors having ohmic magnitude proportional to a binary code; the selected resistors of the parallel combination providing a fixed ohmic magnitude;

c. A second operational amplifier, arranged as a proportional integral controller, connected to the output of said first operational amplifier;

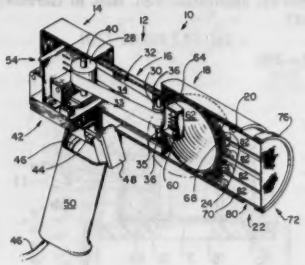
d. a relay, connected to the output of said second operational amplifier, and having a pair of normally open relay controls shunting said first capacitor, whereby by preselecting said fixed ohmic magnitude, a finite time interval can be subdivided into time periods in accordance with the number of times that the first capacitor reaches said fixed voltage during said finite time interval.

4,120,015

ELECTROSTATIC COATING-DISPENSING APPARATUS

Jack R. Haller, Columbus, Ohio, assignor to J. R. Haller, Ltd. Inc., Columbus, Ohio

Filed Feb. 28, 1977, Ser. No. 772,846
Int. Cl.[2] B05B 5/02
U.S. Cl. 361—227 13 Claims



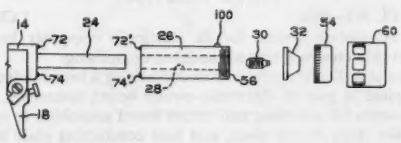
1. An apparatus for electrostatically dispensing dry coating material, said apparatus including means for generating an electrostatic potential, a housing containing said generating means, means carried by said housing for manually actuating said generating means, conductive surface means for storing said electrostatic potential generated by said generator means, the improvement comprising container means separable from said housing for holding said coating material and for transferring said electrostatic potential from said conductive surface means to said coating material, said container means including first and second ends interconnected by a side wall, said container means first end defining a conducting wall means adapted to contact said coating material when held in said container means, means for removably securing said container means to said housing with said conductive surface means adjacent said conducting wall means wherein said electrostatic potential will be transferred from the conductive surface means to the conducting wall means.

4,120,016

DETACHABLE CYLINDRICAL POWER SUPPLY FOR INDUCTION TYPE ELECTROSTATIC SPRAY GUN

Charles D. Hendricks, Livermore, Calif., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 5, 1976, Ser. No. 739,171
Int. Cl.[2] B05B 5/02
U.S. Cl. 361—228 14 Claims



1. In an electrostatic spray apparatus, a spray gun having a barrel portion, at least one fluid passageway for the fluid to be sprayed, fluid valve means for controlling the flow of fluid, nozzle means in said fluid passageway for discharging said fluid in a spray, induction charging means adjacent said spray discharge nozzle, and a light-weight, portable power pack incorporating a power supply for said induction charging means, said power supply being operative to produce a high voltage, low current DC output from a low voltage, low current input, the improvement comprising:

annular casing means for said power pack, said annular casing being molded around said power supply and forming a forward barrel portion of said spray gun and wherein said power supply includes transformer means comprising an annular core, said core having wound thereon an input winding and an output winding;

means for securing said annular casing means to said spray gun;

electrical contact means on said power pack and on said spray gun for connecting said power supply to said spray gun; and

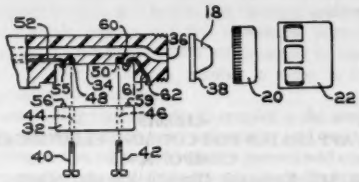
means adapted to connect the high voltage output from said power supply to the induction charging means.

4,120,017

DETACHABLE POWER SUPPLY FOR INDUCTION TYPE ELECTROSTATIC SPRAY GUN

James E. Sickles, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 5, 1976, Ser. No. 739,170
Int. Cl.[2] B05B 5/02
U.S. Cl. 361—228 15 Claims



1. An electrostatic spray apparatus including, in combination:

a spray gun having a barrel portion and at least one fluid passageway for the fluid to be sprayed;

a nozzle means secured to said barrel for receiving said fluid and for discharging said fluid in a spray;

induction charging means adjacent said spray discharge nozzle;

a small, light-weight power pack module incorporating a power supply for said induction charging means, said power supply being operative to produce a high voltage, low current DC output from a low voltage, low current input;

means for detachably securing said power pack to module to said spray gun in operative electrical connection with said induction charging means.

4,120,018

STOP, TAIL AND SIGNAL LAMP

Robert I. Nagel, Mesa, Ariz., assignor to Dominion Auto Accessories Limited, Toronto, Canada

Filed Jan. 27, 1977, Ser. No. 762,865
Int. Cl.[2] F21V 5/04
U.S. Cl. 362—333 2 Claims

1. A back-up lens for a stop and tail lamp which comprises

a body of clear transparent material adapted to be mounted in vertical position in the lamp,

said body comprising an inner surface and an outer surface and having a generally horizontal optical axis extending at a right angle to the plane thereof,

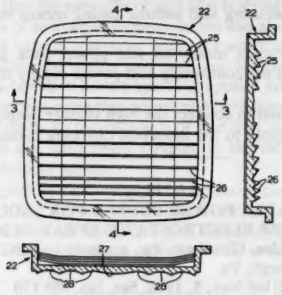
said inner surface of said body having a plurality of parallel horizontally extending dioptrics above and below the optical axis of said body and a plurality of generally parallel horizontal catadioptrics below the dioptrics,

at least one surface of each of said dioptrics is concave,

the endmost portions of each dioptric and catadioptric are at an angle to the central portions thereof,

said outer surface having a central convex cylindrical surface with the axis thereof extending generally parallel to

the plane of said body and a plurality of concave cylindrical surfaces extending vertically on opposite sides of said



convex cylindrical surface with the axes thereof generally parallel to the plane of said body.

4,120,019

APPARATUS FOR COOLING ELECTRICAL COMPONENTS

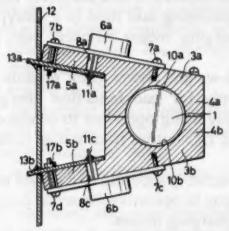
Hiroshi Arii, Kawasaki; Hirohito Kawada, Mitaka; Takashi Yoshida, and Chiaki Nonaka, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 7, 1977, Ser. No. 766,379

Claims priority, application Japan, Feb. 14, 1976, 51-16469[U]

Int. Cl.[2] H05K *7/20*

U.S. Cl. 361—385 **8 Claims**



1. In a cooling assembly including a heat generating electric part having leads, a heat conductive block mounting said heat generating electric part, and a heat pipe attached to said heat conductive block for radiating the heat from said heat generating electric part to the air through said heat conductive block, the improvement in which said heat-conductive block comprises a thickened portion combined with said heat pipe, and a thinned portion having two sides formed contiguously to said thickened portion, said heat generating electric part is mounted on said heat-conductive block so that at least one part of said heat generating electric part extends on one side of said thinned portion, and a connector is arranged on the other side of said thinned portion and connected to said leads of the heat generating electric part, in which said heat conductive block comprises first and second block members having thickened portions and thinned portions, grooves conforming with the shape of said heat pipe are made in said thickened portions, and said heat pipe is held between said grooves, in which said thinned portions of the heat conductive block are opposed to each other, extending obliquely from said thickened portions, so as to diverge from each other.

4,120,020

ELECTRONIC COMPONENT WITH HEAT COOLED SUBSTRATES

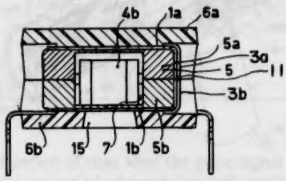
Edward Uden, Barmstedt; Wilhelm Schreihage, Hartenholm, both of Fed. Rep. of Germany, and Johan Christiaan Jacobus Finck, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 11, 1976, Ser. No. 713,520

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2536957

Int. Cl.[2] H05K *7/20*

U.S. Cl. 361—386 **5 Claims**



1. An electronic module comprising:

first and second insulating substrates each having a first side and surface wiring on a second side,

a first heat-dissipating body attached to said first side of the first substrate,

a second heat-dissipating body attached to said first side of the second substrate,

means for making external electrical connections to the surface wiring of at least one of said substrates,

at least two connection leads electrically connecting wiring on the first substrate to a wiring on the second substrate,

means for permanently mechanically connecting said first and second heat-dissipating bodies together in abutting relationship, a first portion of each of said bodies being disposed between the two substrates and a second portion of each of said bodies extending beyond said substrates, and

insulating material enveloping said substrates, said means for making external electrical connections, and said first portions.

4,120,021

COOLING SYSTEM FOR ELECTRONIC ASSEMBLY

Maurice Dean Roush, Chippewa Falls, Wis., assignor to Cray Research, Inc., Chippewa Falls, Wis.

Filed Jun. 30, 1976, Ser. No. 701,017

Int. Cl.[2] H05K *7/20*

U.S. Cl. 361—388 **7 Claims**

1. A cooling system for an electronic computer having removable chassis mounted modules, comprising:

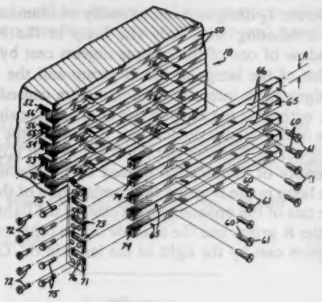
(a) a plurality of modules each comprising a heat conducting plate, a pair of electronic circuit board assemblies, and means for attaching said circuit board assemblies to opposite sides of said plate, said heat conducting plate being wider than said circuit board assemblies so that opposite edges of said plate form heat conducting flanges which extend beyond the edges of said circuit board assemblies;

(b) a plurality of cooling bars forming a part of said chassis, said cooling bars having internal coolant flow passages and having faces with a plurality of slots formed therein removably receiving the heat conducting flanges of said modules;

(c) means for mounting said cooling bars within said chassis in parallel relationship to each other with said slotted faces of adjacent cooling bars facing one another and spaced apart a distance corresponding to the width of said modules to define a plurality of positions for mounting said modules in said chassis;

(d) clamping means connected to said cooling bars and operative when actuated to clamp said heat conducting flanges into heat conducting contact with said cooling bars via said slots;

(e) actuation means operatively connected to said clamping means and operative in a first mode to positively release



said clamping means to permit removal and replacement of modules and operative in a second mode to actuate said clamping means to positively clamp said flanges in said slots; and

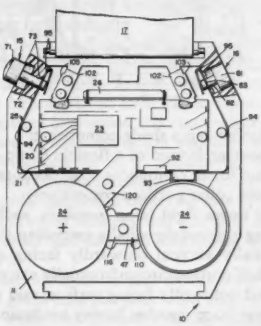
(f) means for supplying coolant fluid to said internal passages of said cooling bars.

4,120,022

PLASTIC MODULAR CASING FOR AN ELECTRONIC WATCH

Carroll R. Perkins, 3400 Main St., Santa Ana, Calif. 92707; Jesse F. Cable, III, 4341 Rafael St., Irvine, Calif. 92714, and Joseph Link, 26752 Magdalena La., Mission Viejo, Calif. 92675

Filed May 24, 1976, Ser. No. 688,983
Int. Cl.[2] H05K *1/04*
U.S. Cl. 361—395 2 Claims



1. In a modular electronic assembly which includes an integrated circuit chip electrically powered by a pair of batteries and an electro-optical display which is operated by the integrated circuit chip, a switch mechanism for use in combination with a nonconductive modular casing, that serves as a casing for the modular electronic assembly and a battery holder for the pair of batteries which includes:

a. non-conductive modular frame that has a substrate cavity, in which the integrated circuit chip is disposed, a conducting member cavity disposed adjacent to said substrate cavity, both of which are disposed adjacent to said conducting member cavity;

b. a first battery connector disposed in said first battery cavity and used for coupling electrically the negative terminal of the battery in said first battery cavity to the casing of the battery in said second battery cavity;

c. a second battery connector disposed in said second battery cavity and used for electrically coupling the negative terminal of the battery in said second battery cavity to the integrated circuit chip; and

d. a conducting member formed from a resilient, conductive material and adapted to be fitted into said conducting member cavity of said modular frame and electrically coupled to the casing of the battery in said first battery cavity and to the integrated circuit chip, a portion of said conducting member being adapted to be formed into a spring mechanism, said switch comprising:

a. a button having a first cylindrical portion of a first particular diameter and adapted to slideably fit into a lower hole drilled in the side of said modular frame adjacent to said conducting member cavity and a second cylindrical portion of a second particular diameter which is larger than the first particular diameter, and adapted to slideably fit into an upper hole adjacent to said lower hole, said button also having a groove adjacent to the end of said first cylindrical portion and adapted to being connected mechanically to said portion of said conducting member in order to form a spring mechanism; and

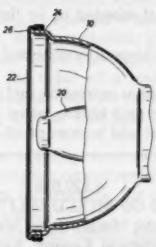
b. a conducting plate electrically coupled to the integrated circuit chip and mounted adjacent to said conducting spring so that when said button is pressed said conducting member electrically contacts said conducting plate.

4,120,023

LENS CLOSURE FOR SPORTS LIGHT FIXTURE

Glen Harold McReynolds, Jr., Austin, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed May 9, 1977, Ser. No. 794,945
Int. Cl.[2] G03B *15/02*
U.S. Cl. 362—16 8 Claims



1. A lighting fixture combination, comprising

a housing for enclosing at least one light bulb therein that emits light in the visible spectrum, such that said bulb is sufficiently recessed so that the plane of an opening through which light emanates does not intersect said bulb,

said housing including entry means to access said bulb other than through said light emanating plane;

said housing including an external gasket rim located behind said light emanating plane and perpendicular thereto;

a gasket located over at least a part of said rim;

a housing window comprising a thin film of fluorocarbon polymer combining tetrafluoroethylene and hexafluoropropylene stretched across said opening and said gasket rim; and

a closing band securing said gasket and said window thin film against said rim.

4,120,024

LIGHTING INSTALLATION

Julian Borisovich Aizenberg, ulitsa Koroleva, 3a, kv. 84, Moscow; Inokh Borukhovich Bukhman, Volgogradskaya ulitsa, 31, kv. 151, Kiev; Vladimir Mikhailovich Pyatigorsky, Molodogvardelskaya ulitsa, 24, korpus 5, kv. 58, and Natalia Mikhailovna Solomatina, ulitsa P. Korchagina, 8, kv. 114, both of Moscow, all of U.S.S.R.

Filed Oct. 18, 1976, Ser. No. 733,386
Int. Cl.[2] F21V *33/00*
U.S. Cl. 362—96 12 Claims

1. A lighting installation for interior lighting of structures having a covering shell and elastic pneumatic supporting members, comprising:

at least one elastic pneumatic hollow slotted light guide which is also a supporting and shaping member of said structure, said structure including a covering shell of an elastic film; a portion of the internal surface of said light guide having a light-reflecting coating; and the other portion of said light guide facing the interior being lighted is a light-permeable slot; said hollow slotted light guide having first and second end portions

at least one optical input device mounted on at least one of said end portions of said hollow slotted light guide and optically coupled to said hollow slotted light guide;

at least one light source arranged in said optical input device which directs the luminous flux from said light source into said hollow slotted light guide;

at least one inlet valve for said hollow slotted light guide; and

means for the supply of gas through said inlet valve into said hollow slotted light guide.

4,120,025

PORTABLE CONTAINER CONVERTIBLE TO LIGHTED DANCING STAGE

John B. Deaven, 5217 3/4 Virginia Ave., Hollywood, Calif. 90029

Filed Sep. 9, 1977, Ser. No. 831,780
Int. Cl.[2] F21S *1/02*
U.S. Cl. 362—153 4 Claims

1. A portable structure convertible to a lighted dancing stage, including:

(a) a bottom panel adapted to lie flat and form a dancing stage;

(b) another panel hingedly connected to said bottom panel; and

(c) illuminating means carried by said other panel for directing light toward said bottom panel when said other panel lies flat adjacent said bottom panel.

4,120,026

METHOD OF MIXED ILLUMINATION

Michihiro Tsuchihashi; Masato Saito; Makoto Yamanoshita, all of Amagasaki; Hidetoshi Katsura, Kamakura; Koichiro Maeyama, Kamakura; Yasushi Uchida, Kamakura, and Osamu Myodo, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 19, 1976, Ser. No. 715,653
Claims priority, application Japan, Aug. 21, 1975, 50/101482
Int. Cl.[2] F21V *9/01*
U.S. Cl. 362—231 6 Claims

1. A method of mixing illumination from a plurality of sources for use in casting beautiful and balanced colored shadows of opaque objects which comprises the steps of:

arranging a plurality of color lamps in three groups including an R group of at least one lamp for emitting colored light in the range yellow to red, a G group of at least one lamp for emitting green light, and a B group of at least one lamp for emitting colored light in the range violet to blue; and

irradiating a pair of opaque objects with colored light emitted by the color lamps in the three groups to cause colored shadows of the objects characterized by intensity ratios of illumination in the ranges of

$$0.05 \leqq I_R/(I_R + I_G + I_B) \leqq 0.85;$$

$$0.05 \leqq I_G/(I_R + I_G + I_B) \leqq 0.8; \text{ and}$$

$$0.02 \leqq I_B/(I_R + I_G + I_B) \leqq 0.8$$

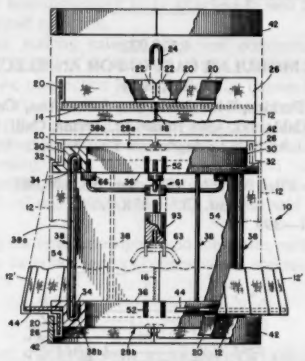
wherein I_R designates an intensity of illumination caused by irradiating with only the lamp in the R group the shadow of one of the opaque objects cast by both of the lights of the lamps in the G group and the B group, I_G designates an intensity of illumination caused by irradiating with only the lamp in the G group the shadow of the one of the opaque objects cast by both of the lights of the lamps in the R group and the B group, and I_B designates an intensity of illumination caused by irradiating with only the lamp in the B group the combination of the shadow of the one of the opaque objects cast by the light of the lamp in the R group and the shadow of the other of the opaque objects cast by the light of the lamp in the G group.

4,120,027

COLLAPSIBLE LAMP SHADE HAVING INTERCHANGEABLE CONFIGURATIONS

Mortimer M. Stark, 245-42 62nd Ave., Douglaston, N.Y. 11362

Filed Mar. 14, 1977, Ser. No. 777,515
Int. Cl.[2] F21V *11/18, 17/00*
U.S. Cl. 362—352 17 Claims



1. A collapsible lamp shade comprising:

a shade member formed of a flexible fabric material having upper and lower continuous edge portions defining upper and lower collar portions respectively;

upper and lower rigid hoop members, each hoop member including a circumferentially extending sidewall having a substantially vertical outwardly facing sidewall surface and a shelf portion circumferentially extending outwardly from said outwardly facing surface, said shelf portion on said upper hoop member having a substantially horizontal upwardly facing surface spaced from the upper edge surface thereof and said shelf portion on said lower hoop member having a substantially horizontal downwardly facing surface spaced from the lower edge surface thereof, said upper and lower rigid hoop members further including means provided on their lower and upper edge surfaces respectively for receiving one end of each of a plurality of support rods;

said shade member upper collar portion being removably concentrically located around said upper hoop member outwardly facing sidewall surface and constrained from downward movement by said upwardly facing shelf portion surface and said shade member lower collar portion being removably concentrically located around said lower

hoop member outwardly facing sidewall surface and constrained from upward movement by said downwardly facing shelf portion surface; and

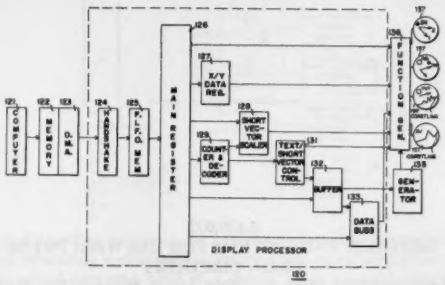
a plurality of support rods vertically extending between said hoop members inwardly of said shade member, each support rod having a pair of end portions receivable within said end receiving means provided on said hoop members;

whereby said fabric shade member is maintained in a stretched configuration by said rod members which space said hoop members in a mutually opposed, parallel relationship.

4,120,028
DIGITAL DISPLAY DATA PROCESSOR

Robert J. Membrino, and John C. Gaughan, both of Silver Spring, Md., assignors to The Singer Company, Binghamton, N.Y.

Filed Oct. 21, 1976, Ser. No. 734,660
Int. Cl.² G06F 3/14
U.S. Cl. 364—200 **12 Claims**



1. An electronic processing system that saves computer software and computer time by receiving instruction and data words from a digital computer that contain information for automatically controlling the appearance at a particular X, Y position of desired graphical conical matter, alphanumeric characters and symbols of predetermined sizes on a plurality of individually addressable stroke writing cathode ray tubes, said processing system comprising:

a. an interface that causes the instruction and data words of a digital computer to be electrically compatible with the remainder of said system so that the instruction and data words may be transferred from said computer;

b. a first-in-first-out instruction and data memory coupled to said interface so said instruction and data words which contain information on X, Y positioning, alphanumeric characters or symbol addressing, alphanumeric character size and conical radius and centering may be entered into said first-in-first-out memory and exit said memory serially in the order said data and instruction words entered said memory;

c. a first register coupled to said memory for temporarily storing at a given time one data word and/or one instruction word when the remainder of said system has completed the processing of the previous instruction and/or data word and is ready to process the next data or instruction word;

d. decoding means coupled to said first register for decoding the instructions stored in said register;

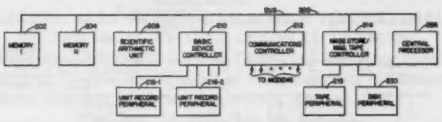
e. sequencing means coupled to said decoding means and said first register for controlled processing of said data word and/or said instruction word; and

f. a plurality of writing means for writing various types of conical graphical matter, alphanumeric characters and symbols on respective ones of said plurality of cathode ray tubes in accordance with the information given by said instruction and data words, said means coupled to said plurality of cathode ray tubes, said decoding means and said sequencing means, whereby said system follows the instructions and processes the data transmitted by said computer permitting said computer to process additional information since said computer will have less information to process because said computer will only send instruction and data words to said processing system when said computer wants to change the information and data currently appearng on one or all of said cathode ray tubes.

4,120,029
METHOD AND APPARATUS FOR RECOVERING A SIGNAL TRANSFERRED OVER A COMMON BUS IN A DATA PROCESSING SYSTEM

Gordon Lewis Steiner, Milford, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 27, 1976, Ser. No. 754,287
Int. Cl.² G06F 3/04
U.S. Cl. 364—200 **12 Claims**



8. In a data processing system having a common bus for coupling a plurality of units for the transfer of information therebetween, each transfer taking place during a bus cycle granted to the highest priority unit requesting a bus cycle, the unit transferring said information referred to as a master unit in a particular cycle and the unit receiving said information referred to as a slave unit for a particular cycle, apparatus for recovering a signal to a predetermined value, said signal representing a portion of said information, said apparatus comprising:

A. means for indicating by means of a first signal to each of said units that a previous master unit has transferred information, including said signal to be recovered, over said bus during a previous bus cycle;

B. first means for enabling said signal to be recovered to recover to said predetermined value, in response to said means for indicating, in a period of time determined by the length of said bus, the characteristic impedance of a signal line of said bus on which said signal to be recovered is transferred, and the value of a termination impedance coupled with said signal line, said value of said termination impedance being greater than said characteristic impedance;

C. second means for enabling, responsive to said means for indicating and operative concurrently with the operation of said first means for enabling, for enabling the generation of a control signal;

D. means, responsive to said control signal, for deactivating an acknowledgement signal provided by a previous slave unit to said previous master unit in response to the transfer of information from said previous master unit;

E. means for coupling, in response to said means for deactivating, a new master unit to transfer information over said bus; and

F. means for transferring, in response to said means for coupling, a strobe signal to a new slave unit for use in receiving information at said new slave unit.

4,120,030
COMPUTER SOFTWARE SECURITY SYSTEM

Richard Johnstone, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Mar. 11, 1977, Ser. No. 776,702
Int. Cl.² G06F 13/06, 7/00; G11C 7/00
U.S. Cl. 364—200 **9 Claims**

1. In a computer system including means for generating a

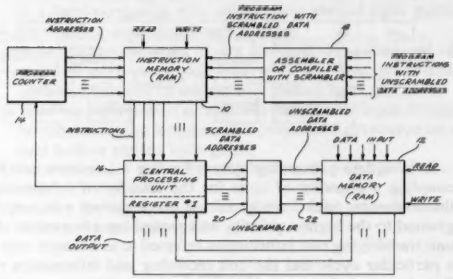
sequence of instruction signals which represent program instructions for performing designated computer operations, some instruction signals having data address portions which represent the addresses at which data involved in the corresponding operations is stored, said instruction signals being stored in memory means in said computer system, the improvement for disguising said program instructions comprising:

a data memory in said memory means, said data memory having address input conductors and data output conductors;

means for storing in said data memory data signals representing quantities referred to in said program instructions at the addresses specified in said data address portions of said instruction signals;

scrambler means for scrambling the data address portions of said instruction signals in accordance with a predetermined cipher key;

an instruction memory in said memory means;



means for storing said instruction signals including those with scrambled data address portions in said instruction memory;

means for reading said instruction signals out of said instruction memory;

an unscrambler coupled in series with said data memory address conductors, said unscrambler being operable in accordance with said cipher key to unscramble any scrambled data address signals applied to the input thereof and to apply the unscrambled data address signals to said data memory address conductors;

means for applying said scrambled data address signals read out of said instruction memory to the input of said unscrambler; and

means for reading data out of said data memory at said unscrambled addresses in accordance with said program instructions for use in the corresponding computer operations.

4,120,031

UTILITY USAGE MONITORING SYSTEMS

Dan D. Kincheloe, Newport, Beach; Elmo M. Gregory, Costa Mesa; Carl David Todd, Costa Mesa, and Edson B. Gould, III, all of Newport Beach, Calif. 92660, assignors to Energy Conservation Systems, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 706,679, Jul. 19, 1976. This application Jun. 27, 1977, Ser. No. 810,675

Int. Cl.[2] G06K *1/00;* **G01R** *19/16;* **G06F** *15/20*

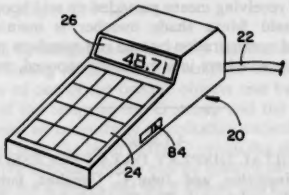
U.S. Cl. 364—464 **71 Claims**

1. A device for monitoring usage of a particular utility and displaying the accumulated usage in a monetary designation comprising;

means for providing an analog signal responsive to the rate of usage of the utility,

voltage controlled oscillator means responsive to said analog signal for providing a voltage controlled oscillator means signal having a repetition rate responsive to the rate of usage of the utility,

means for providing a cumulative signal responsive to the cumulative repetition of said voltage controlled oscillator means signal, said last named means including means for varying the relationship of said cumulative signal with respect to said cumulative repetition of said voltage con-



trolled oscillator means signal in accordance with a cost per unit of the utility; and

means for displaying said cumulative signal in numerical form.

4,120,032

METHODS AND SYSTEMS FOR USE WITH PULSE TRAIN CIRCUITRY

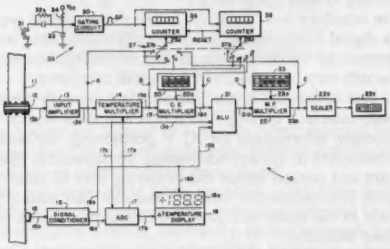
Mohammad Kian Mirdadian, 7015 Atwell, Houston, Tex. 77036

Continuation of Ser. No. 553,834, Feb. 27, 1975, Pat. No. 4,038,534. This application May 6, 1977, Ser. No. 794,415

The portion of the term of this patent subsequent to Jul. 26, 1994, has been disclaimed.

Int. Cl.[2] G01F *1/08, 15/02*

U.S. Cl. 364—510 **12 Claims**



1. A system for simultaneously obtaining pulse counts from first and second electrical pulse train producing means comprising:

(a) a first counter for counting the pulses in the pulse train produced by said first means;

(b) a second counter for counting the pulses in the pulse train produced by said second means;

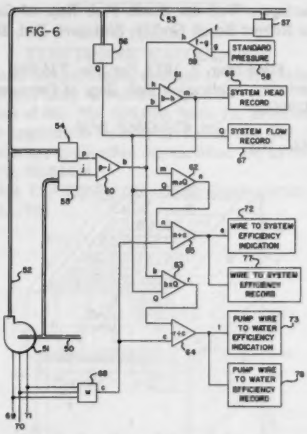
(c) gating means actuatable at random for simultaneously starting the counting operation of said first and second counters, and actuatable at random for simultaneously stopping said counting operation of said first and second counters; and

(d) display means for displaying the accumulated counts in said first and second counters when said counting operations have been so simultaneously stopped.

4,120,033
APPARATUS AND METHOD FOR DETERMINING PUMPING SYSTEM HEAD CURVES

Anthony Bruce Corso, and James Burton Rishel, both of Cincinnati, Ohio, assignors to Corporate Equipment Company, Cincinnati, Ohio

Filed Jan. 4, 1977, Ser. No. 756,909
Int. Cl.[2] G01L *13/00*; G01D *9/02*
U.S. Cl. 364—510 **7 Claims**

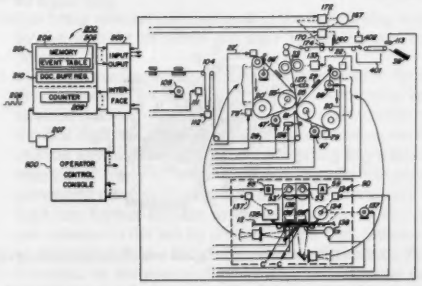


1. Recording apparatus for a fluid supply system comprising first measuring means for generating a first signal indicative of the actual pumping head at a supply point for said system, second measuring means for generating a second signal indicative of the actual fluid delivery pressure at a delivery point in said system, signal generating means for generating a third signal indicative of a desired fluid delivery pressure at said delivery point, combining means for combining said first, second and third signals to obtain a fourth signal indicative of said first signal reduced by an amount equal to the difference between said second and third signals, and first recording means for recording said fourth signal as an indication of a system head requirement.

4,120,034
PROGRAMMABLE CONTROLLER FOR CONTROLLING REPRODUCTION MACHINES

Bernard C. Fisk, Dallas, Tex., and Gerald C. VerSchage, Henrietta, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 12, 1974, Ser. No. 496,663
Int. Cl.[2] G06F *15/20*; G03G *15/00*
U.S. Cl. 364—518 **3 Claims**



1. A method of operating a reproduction system including a reproduction machine having a plurality of process step implementing means, a programmable controller operatively connected to enable said plurality of process step implementing means, and means for receiving input signals from the controller, comprising the steps of:

inputting a reproduction run instruction of a predetermined characteristic to said controller;

storing an operating program having instruction routines for determining timing intervals between successive copying process steps;

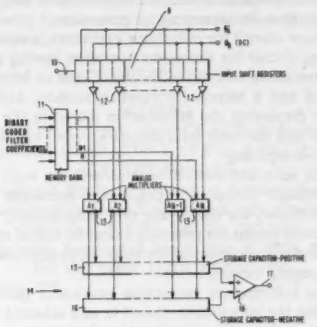
commanding said controller to operate whereby said controller generates timed control signals related to the timing intervals in successive cycles for making copies in succession; and

programming said controller with instruction routines for enabling said controller to scan the input signals periodically at the controller cycle speed.

4,120,035
ELECTRICALLY REPROGRAMMABLE TRANSVERSAL FILTER USING CHARGE COUPLED DEVICES

Moises Cases, Fishkill; Fung Yuel Chang, and Barry Jay Rubin, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1977, Ser. No. 825,123
Int. Cl.[2] G06G *7/16*; H03K *5/159*
U.S. Cl. 364—602 **6 Claims**



1. A CCD digital filter comprising:

means for sampling without destroying an analog signal at various points and providing voltages proportional to each sampled signal;

means for separately applying said voltages to a CCD analog multiplier;

said analog multiplier including means for applying one of said voltages to a sample signal gate which creates charge linearly proportional to the amplitude of said analog signal; means for applying an digital filter coefficient for creating or not-creating said charge depending upon whether the bit of said filter coefficient is 1 or 0; a charge splitting storage gate; means for transferring charge from the substrate beneath the said sampled signal gate to the substrate beneath the said charge splitting gate; a charge splitting control gate for splitting the said charge; means for dumping one portion of the said split charge; and means for passing the said filter coefficient through the said analog multiplier successively according to the number of bits in said filter coefficient which results in the multiplication of said analog signal by said filter coefficient;

means for simultaneously dumping the separate multiplied sample signal into a means for summing all sample signals to produce an analog signal modified by digital filter coefficients.

4,120,036

TIME INFORMATION CORRECTION IN COMBINATION TIMEPIECE AND CALCULATOR

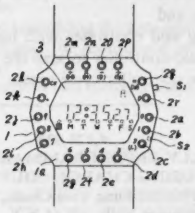
Hidetoshi Maeda, Tenri, and Takehiko Sasaki, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 3, 1976, Ser. No. 720,205

Claims priority, application Japan, Sep. 5, 1975, 50-122917[U]; Apr. 2, 1976, 51-37371

Int. Cl.² G04B 47/00; G06F 7/38

U.S. Cl. 364—705 9 Claims



1. In a combination timepiece and calculator including numeral keys for introducing numeral information into the combination timepiece and calculator, function keys for introducing operation commands into the combination timepiece and calculator, a base frequency signal generator, a power source, a computation circuit for calculator operation, a time information keeping circuit for timepiece operation having a plurality of time information sections including at least an hour information section and a minute information section, and a digital display for displaying the information stored in the computation circuit and the time information keeping circuit, the improvement comprising:

a. a mode selection switch for alternatively activating said computation circuit for calculator operation and said digital display for displaying time information;

b. a selection means for selecting a desired one of at least said hour and minute information sections, in the time information keeping circuit;

c. a time information correction command generator for resetting the information stored in said selected section of the time information keeping circuit to zero; and

d. a time information setting means for introducing a desired value into only said desired one selected section of the time information keeping circuit.

4,120,037

DESK-TOP ELECTRONIC CALCULATOR AND TAPE RECORDER ASSEMBLY

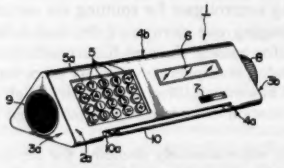
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Mar. 4, 1977, Ser. No. 774,401

Claims priority, application Japan, Mar. 23, 1976, 51-34932[U]

Int. Cl.² G06F 15/02

U.S. Cl. 364—705 9 Claims



1. A desk-top electronic calculator and tape recorder assembly characterized in that the assembly has a housing in the form of a triangular prism, the housing having one side in which input keys and a numerical display associated with the calculator are disposed and another side in which a cassette receiving chamber is formed, and a loudspeaker is disposed in at least one face of the housing.

4,120,038

FLASH UNIT WITH ELECTRONIC EXPOSURE SETTING CALCULATOR

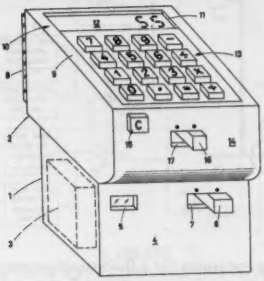
Albert Stieringer, Weil der Stadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,692

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1976, 7607299[U]

Int. Cl.² G06F 7/38

U.S. Cl. 364—705 9 Claims



1. In a flash unit for use with a photographic camera of the type having exposure-variable adjusters settable to different camera settings for setting the values of independent and dependent flash-exposure variables of the photographic camera, electronic calculating means usable by the photographer for inputting the values of independent exposure variables and operative for automatically calculating therefrom the numerical value of a camera setting to be established for a dependent flash-exposure variable.

4,120,039

ELECTRONIC DIGITAL WATCH COMBINED WITH A COMPUTER

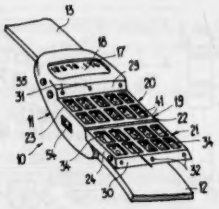
Janos Fischer, Feldblumenweg 22, Zurich, Switzerland

Filed Jun. 14, 1977, Ser. No. 806,372

Claims priority, application Switzerland, Jun. 25, 1976, 8129/76

Int. Cl.² G06F 3/02, 15/02; G04B 19/30

U.S. Cl. 364—705 4 Claims



1. A combination electronic digital watch-computer device which includes

a display field which is operable in conjunction with either the electronic digital watch portion of said device or the computer portion of said device;

said computer portion of said device including a keyboard which is divided into at least two sections, each being connected to an adjacent section by a hinge so as to be foldable on top of one another in a non-accessable mode or folded out away from one another into a useable mode;

the keyboard including a plurality of keys, each formed by side walls enclosing a depression, a bottom wall, and a vertically movable trigger means projecting upwardly into the depression from the bottom wall, the trigger means being positioned so as to be disposed eccentrically within the depression.

4,120,040

ELECTRONIC CALCULATOR

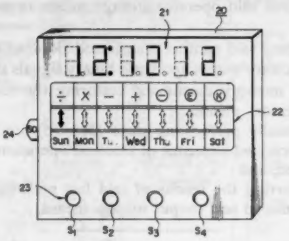
Mitsuo Aihara, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kawasaki, Japan

Continuation of Ser. No. 666,069, Mar. 11, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,130

Claims priority, application Japan, Mar. 14, 1975, 50-30037; Apr. 30, 1975, 50-51444

Int. Cl.[2] **G06F** *3/02, 15/02;* **G04B** *19/30*

U.S. Cl. 364—709 **1 Claim**



1. An electronic calculator and timepiece having only four input keys and one lockswitch capable of addition, subtraction, multiplication and division of numbers comprised of the digits 0–9 and capable of displaying the time by hours, minutes and seconds and the date by year, month, day and day of the week comprising:

a first display section for displaying numbers to be added, numbers to be subtracted, numbers to be multiplied, numbers to be divided and numbers which constitute the result of addition, subtraction, multiplication and division,

a second display section for displaying the addition operation, the subtraction operation, the multiplication operation and the division operation and for indicating whether the result of an addition, subtraction, multiplication or division is positive or negative,

the only four input keys comprising:

a digit presetting key,

a digit shifting key,

an arithmetic operational mode designating key,

an equal key,

a digit being entered and displayed in the first display section by the number of times the digit presetting key is depressed,

a multidigit number being entered and displayed in the first display section by depressing the digit presetting key a selected number of times to enter a first digit, transferring the first digit one column to the left by depressing the digit shifting key, depressing the digit presetting key a selected number of times to enter a second digit in the column previously occupied by the first digit, transferring the first digit one further column to the left and the second digit one column to the left by depressing the digit shifting key to permit entry of a third digit in the column previously occupied by the second digit by depressing the digit presetting key a selected number of times,

an addition, subtraction, multiplication or division operation being entered and displayed in the second display section by depressing the arithmetic operational mode designating key a predetermined number of times, the predetermined number of times being different for the addition, subtraction, multiplication and division operations,

the result of the addition, subtraction, multiplication and division being entered and displayed in the first display section by depressing the equal key,

the first display section being cleared by simultaneously depressing a combination of the four input keys,

a lock switch for selecting operation as a calculator or for selecting operation as a timepiece,

the second display section also displaying the days of the week,

the first display section displaying the time by hours, minutes and seconds when the lock switch has selected operation as a timepiece,

the first display section displaying the date by year, month and day and the second display section displaying the day of the week when the lock switch has selected operation as a timepiece and one of the input keys has been depressed, and

the designation of a time digit position requiring correction, the correction of the digit appearing in the time digit position, the time correction of seconds, the designation of a calendar digit position requiring correction and the correction of the digit appearing in the calendar digit position being effected when the lock switch has selected operation as a timepiece by depressing one of the input keys or by simultaneously depressing a combination of the four input keys.

4,120,041

SEMICONDUCTOR DEVICE FOR USE IN AN ELECTRONIC APPARATUS HAVING A PLURALITY OF CIRCUIT BOARDS

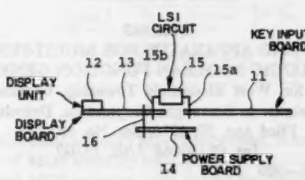
Masao Hayakawa, Kyoto, and Masahiro Nomura, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1976, Ser. No. 747,059

Claims priority, application Japan, Dec. 5, 1975, 50-164505

Int. Cl.[2] **G06F** *15/00;* **H05K** *1/04*

U.S. Cl. 364—712 **7 Claims**



1. In a semiconductor device for use in an electronic apparatus which includes information entry means mounted on a first circuit board and display means mounted on a second circuit board, the improvement comprising:

a Dual In-line Plug-in type package for containing the semiconductor device therein;

output terminals of the semiconductor device aligned on one side of the Dual In-line Plug-in type package;

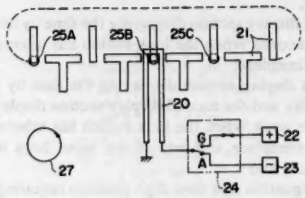
input terminals of the semiconductor device aligned on the other side of the Dual In-line Plug-in type package; and

means for installing the Dual In-line Plug-in type package to extend between the first circuit board and the second circuit board in such a manner that the output terminals of the semiconductor device are connected to the second circuit board and the input terminals of the semiconductor device are connected to the first circuit board both mechanically and electrically, respectively, to physically join said boards together through said package.

4,120,042
MAGNETIC BUBBLE INFORMATION WRITING DEVICE

Masuo Kasai, Kokubunji; Shigeru Yoshizawa, Tokorozawa, and Minoru Hiroshima, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 612,430, Sep. 11, 1975. This application Oct. 12, 1976, Ser. No. 731,317
Claims priority, application Japan, Sep. 11, 1974, 49-103914
Mar. 28, 1975 [JP] Japan 50-36735
Int. Cl.[2] G11C *19/00*
U.S. Cl. 365—2 8 Claims

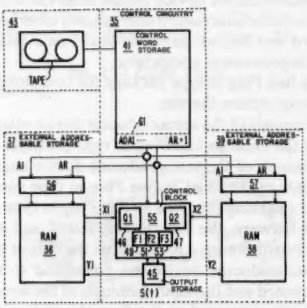


1. A magnetic bubble information writing device comprising:
- a sheet of magnetic material in which single wall domains can be propagated, said material having a preferred direction of magnetization substantially normal to the plane of said sheet,
- means for providing a bias field substantially normal to the plane of said sheet,
- magnetic layer patterns adjacent to said sheet for defining a propagation channel for domains in said sheet,
- means for generating a magnetic field rotating through 360 degrees in the plane of said sheet,
- a single conductor loop disposed on a projecting portion of said magnetic layer patterns, enclosing only said projecting portion, and
- means for selectively applying without regard to old information a current of a first polarity and a current of a second polarity respectively into the conductor loop when an information "0" and "1" respectively are to be written, whereby said old information can be conformed to new information to be written.

4,120,043
METHOD AND APPARATUS FOR MULTI-FUNCTION, STORED LOGIC BOOLEAN FUNCTION GENERATION

Chauchang Su, West Bloomfield Township, Oakland County, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 30, 1976, Ser. No. 682,118
Int. Cl.[2] G06F *1/02, 13/00*
U.S. Cl. 364—900 8 Claims

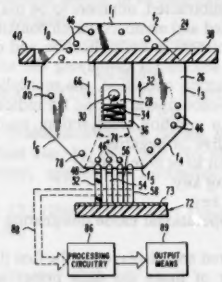


1. In a stored logic, Boolean function generator comprising an operator storage means for storing a predetermined sequence of Boolean operations, a first memory means and a second memory means for storing binary signals, an output storage means and circuitry means coupled to said operator storage means, said first memory means and said second memory means, and said output storage means, a method for performing a Boolean function by executing said predetermined sequence of Boolean operations stored in said operator storage means by successively configuring said circuitry means to execute said predetermined sequence of Boolean operations on said binary signals as they are transferred between said first memory means and said second memory means via said configured circuitry means, said method comprising the steps of:
(1) loading said predetermined sequence of Boolean operations into said operator storage means;
(2) loading said binary signals into said first memory means;
(3) transferring one of said sequence of Boolean operations from said operator storage means to said circuitry means;
(4) executing said transferred Boolean operation in said circuitry means upon said binary signals stored in said first memory means and storing the operational results in said second memory means;
(5) transferring another of said sequence of Boolean operations from said operator storage means to said circuitry means;
(6) executing said another transferred Boolean operation in said circuitry means upon said binary signals stored in said second memory means and restoring the results in said first memory means;
(7) continually performing steps (3) – (6) until all of said predetermined sequence of Boolean operations have been executed; and
(8) transferring the results of said last performed Boolean operations to said output storage means.

4,120,044
DATA ENCODING KEYBOARD

George Michael Harayda, Middlesex, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 16, 1976, Ser. No. 723,955
Int. Cl.[2] G06F *3/02, 7/38*
U.S. Cl. 364—900 8 Claims



1. In an electronic system of the type including keyboard means for entering information into the system, processing means for processing the entered information and for performing selected operations in response to said entered information, and output means for displaying the results of the entered information or selected operation, said processing means performing any one of a plurality of operations in response to the entered information determined by said input means, the input means comprising a plurality of separate, different rotary thumbwheel pushbutton switch means having first and second positions coupled to said processing means, each said switch means having a first normally open switch condition when said switch means is in said first position, said switch means includ-

ing switch encoding means having a plurality of selectable binary encoded second closed switch conditions when said switch means is displaced to said second position, each said closed switch condition entering information or causing said processing means to perform an operation corresponding to the selected binary code of that switch means.

4,120,045
APPARATUS AND METHOD FOR STEPWISE SCANNING OF PATTERNS ACCORDING TO A SCANNING RASTER

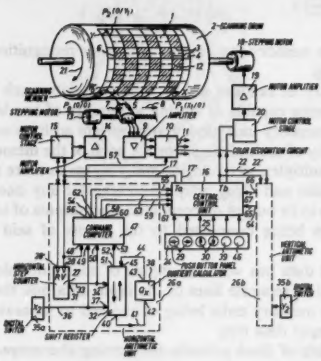
Klaus Moellgaard, and Ulrich Sendtko, both of Kiel, Germany, assignors to Dr. Ing. Rudolf Hell, GmbH, Germany

Filed Sep. 27, 1976, Ser. No. 726,671

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1975, 2543246

Int. Cl.² G06K *7/14*

U.S. Cl. 364—900 **19 Claims**



1. A process for scanning a pattern by a scanning member moving relatively to the pattern in individual steps, wherein said pattern is divided into a plurality of fictitious meshes enclosed by raster lines of an imaginary scanning raster, and in which before scanning, the necessary number of steps corresponding to the width of one mesh in a first step direction is obtained by forming a quotient from the number of steps corresponding to the length of the pattern in said step direction and from the number of meshes in said step direction, and wherein the calculation of quotients is made for both said first step dimension and a second dimension of the pattern, forming multiples of said quotients, each of said multiples associated with a fictitious raster line which determines the necessary number of individual steps from the scanning start to said raster line, and wherein the numbers of steps which are carried out during scanning in said first and second dimensions of the pattern are counted and compared to the respective multiples of said quotients, and when these are equal or deviate from a predetermined fraction of an individual step, a signal is generated which indicates the beginning of the next adjacent raster line of the imaginary scanning raster and wherein upon a greater deviation than said predetermined fraction the signal is utilized after an additional step has been accomplished.

4,120,046
TWO DIMENSIONAL STRETCHER DETECTOR

Thomas T. Chen, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 6, 1977, Ser. No. 831,034

Int. Cl.² G11C *19/08*

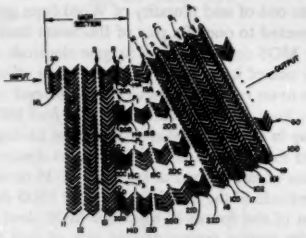
U.S. Cl. 365—8 **11 Claims**

1. A magnetic bubble domain detection device comprising,

input means for receiving a magnetic bubble domain,

replicator means for producing a plurality of magnetic bubble domains in response to a magnetic bubble domain at said input means,

a plurality of propagation paths for receiving the magnetic bubble domains from said replicator means, and



a plurality of common propagation devices for receiving the magnetic bubble domains from each of said plurality of propagation paths,

said plurality of propagation paths are arranged to transfer bubbles from said replicator means to said plurality of common propagation devices in different time periods.

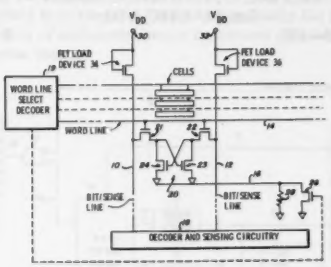
4,120,047
QUASI-STATIC MOS MEMORY ARRAY WITH STANDBY OPERATION

Andrew G. Varadi, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Apr. 20, 1977, Ser. No. 789,175

Int. Cl.² G11C *7/00*

U.S. Cl. 365—227 **3 Claims**



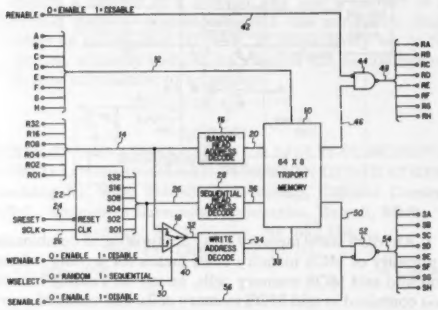
1. An MOS static memory array comprising, in combination, a plurality of MOS memory cells, means for writing information into said MOS memory cells, means for reading information contained in said MOS memory cells, and constant energy source means for maintaining the information state of said MOS memory cells during the period of time when there is no reading or writing operation being performed with said MOS memory cells, a plurality of Bit/Sense lines connected to said MOS memory cells, a plurality of Word line select decoder lines connected to said MOS memory cells, and a plurality of common return lines connected to said MOS memory cells, each of said common return lines having current sinking means for permitting current sinking into said current sinking means from all of said MOS memory cells connected to each of said common return lines during writing and reading operations, and means connected to each of said common return lines for permitting some current flow from each of said MOS memory cells connected to each of said common return lines to pass through said common return lines during the period of time when there is no reading or writing operation being performed with said MOS memory cells, said current sinking means comprising an MOS device, said current flow permitting means

comprising only one resistor device, said resistor device being connected in parallel to said MOS device, each of said memory cells comprising four MOS devices, each of said four MOS devices having a gate electrode, a drain region and a source region, one of said four MOS devices having its gate electrode connected to one of said plurality of Word lines and its drain region connected to one of a pair of Bit/Sense lines, a second of said four MOS devices having its gate electrode connected to the same one of said plurality of Word line select decoder lines and its drain region connected to the second of said pair of Bit/Sense lines, a third and fourth of said four MOS devices connected up in a cross-coupled arrangement having the drain region of the third of said four MOS devices connected to the source region of said second of said four MOS devices and to the gate electrode of the fourth of said four MOS devices, the drain region of the fourth of said four MOS devices is connected to the source region of said one of said four MOS devices and to the gate electrode of the third of said four MOS devices, the source regions of both the third and fourth of said four MOS devices being connected to one of said plurality of common return lines that is associated with said one of said plurality of Word lines said memory array being adapted to operate at all times with a single power supply, said memory array being adapted to operate at all times with a +5 volt single power supply.

4,120,048
MEMORY WITH SIMULTANEOUS SEQUENTIAL AND RANDOM ADDRESS MODES

James L. Fuhrman, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 27, 1977, Ser. No. 864,281
Int. Cl.[2] G11C *8/00*
U.S. Cl. 365—239 **3 Claims**



1. Multiple access memory apparatus comprising, in combination:

cell memory means including data input means, random access output means, sequential access output means, random read input means, sequential read input means, and write input means;

data source means connected to said data input means of said cell memory means for supplying data bits thereto;

sequential address signal supply means;

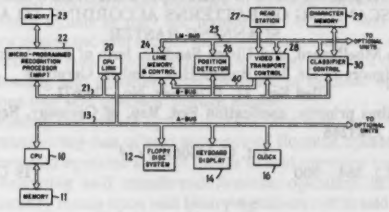
random address signal supply means; and

control means connected to said cell memory means, said sequential address signal supply means and said random address signal supply means for providing one of simultaneous operation modes of (1) random read/sequential read, (2) random read/sequential write and (3) random write/sequential read.

4,120,049
LINE MEMORY

Michael Thaler, East Hartford, and Ronald Gocht, Manchester, both of Conn., assignors to Scan-Optics, Inc., East Hartford, Conn.

Filed Jun. 24, 1977, Ser. No. 809,697
Int. Cl.[2] G11C *11/26, 8/00*
U.S. Cl. 365—230 **4 Claims**



1. A line memory for use in a character recognition system comprising:

a plurality of random access memory units, each memory unit being capable of storing a plurality of one bit words, each memory unit having appropriate address controls;

a plurality of multiplexers, one for each of the memory units, said multiplexers having as many inputs as there are memory units and being adapted to transfer any one of these inputs to its output on command, the outputs of said multiplexers being connected to the inputs of said memory units;

an input data bus with the inputs of each multiplexer connected to separate lines of the input data bus, the outputs of the memory units being connected to separate lines of said input data bus;

a plurality of latch circuits for storing the outputs of the multiplexers;

a memory control circuit means for controlling the multiplexers and address controls on the memory units so as to store lines of data presented on the input data bus in parallel blocks and to supply two-dimensional arrays of the stored data to the latch circuits;

a controller bus for supplying data to the memory and instructions to the memory control circuit to bring about the control of the multiplexers and the address controls of the memory units; and

a line memory bus for supplying data from the latch circuits to sub-assemblies of the character recognition system, for supplying data to the input data bus and for supplying requests for data to the memory control circuit to bring about the control of the multiplexers and the address control of the memory units.

4,120,050
DEVOLATILIZING VENT

Gregory C. Craig, and William B. Eckstein, both of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio

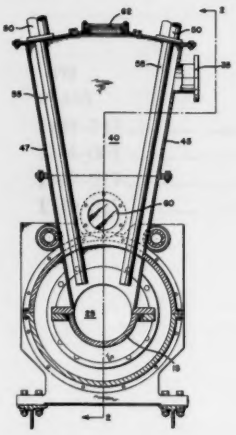
Filed Mar. 17, 1977, Ser. No. 778,464
Int. Cl.[2] B29B *1/10*
U.S. Cl. 366—75 **10 Claims**

1. A vent for use with devolatilizing apparatus including a cylindrical cage having an inlet and an outlet for a material to be devolatilized, a rotatable shaft carrying a plurality of screw members in said cage arranged to convey the material through said cage, and means for rotating said shaft, comprising:

means defining a vent opening in the upper portion of the cage,

vent duct means, communicating with said vent opening, for defining a closed vent chamber into which vapor may escape, said vent chamber extending substantially vertically above said vent opening, the horizontal cross-sec-

tional area of said chamber increasing from the bottom to the top of said chamber, and



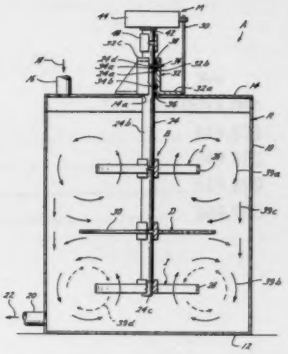
vapor return means communicating only with the upper portion of said vent chamber for extracting vapor from said chamber.

4,120,051

MIXING APPARATUS

Franklin M. Lohning, Sugar Land, Tex., assignor to Franklin Enterprises, Inc., Sugar Land, Tex.

Filed Sep. 19, 1977, Ser. No. 834,715
Int. Cl.[2] B01F 7/16
U.S. Cl. 366—142 9 Claims



1. A mixing apparatus for mixing fluids in a reservoir, each fluid having different densities requiring different torques for proper mixing thereof, comprising:

mixing means in the reservoir for mixing the fluid within the reservoir;

motor means mounted with the reservoir and operably connected to said mixing means for powering said mixing means for mixing the fluid within the reservoir; and,

limit means operably controlling said motor means for limiting the maximum horsepower of said motor means absorbed in mixing the fluid to substantially the rated horsepower of said motor means to prevent overloading of said motor means.

DESIGN PATENTS

GRANTED OCT. 10, 1978

ERRATA

For CLASS	See PATENT NO.
D08–343	249,871
D14–061	249,882
D99–027	249,899
D99–028	249,900

249,826
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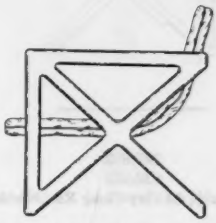
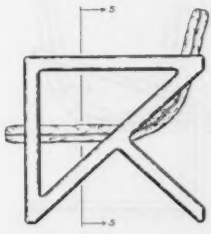
Henry Gustaf Reinhold Glaby, Näsbydalsvägen 4, s-183 31 Täby, Sweden
Filed Sep. 3, 1976, Ser. No. 720,375
Claims priority, application Sweden, Mar. 5, 1976, 76516
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—229

249,827
WELDING HELMET
Perry J. Rieppel, Worthington, and Harold R. Henderson, Lancaster, both of Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Feb. 28, 1977, Ser. No. 772,793
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232

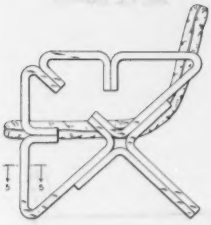
249,828
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,607
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



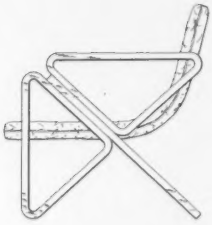
249,829
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,608
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



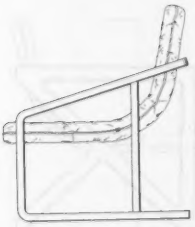
249,830
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,620
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



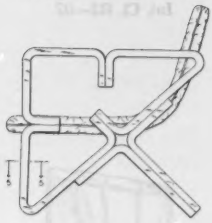
249,831
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,618
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



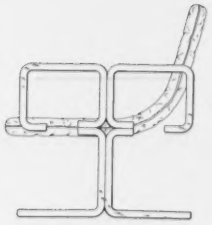
249,832
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,900
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



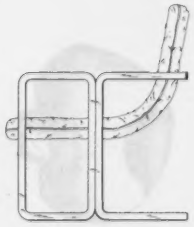
249,833
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,621
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



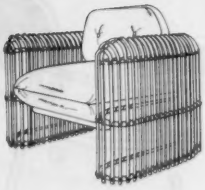
249,834
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,625
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



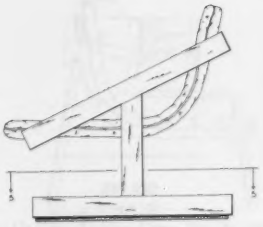
249,835
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,907
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



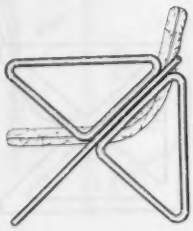
249,836
CHAIR
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11560
Filed Feb. 16, 1977, Ser. No. 769,298
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



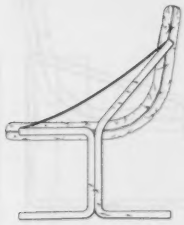
249,837
CHAIR
Steven Douglas Gageby, 12 Hay Cmp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,612
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,838
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,619
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,839
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,628
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,840
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
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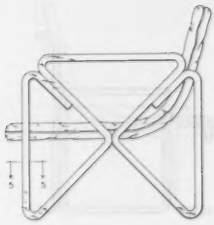
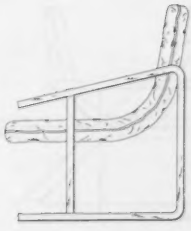
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,841
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,901
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



249,842
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
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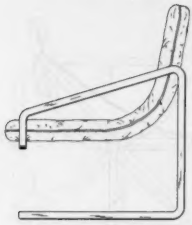
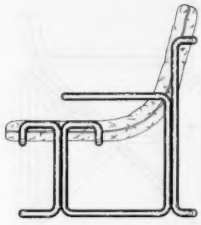
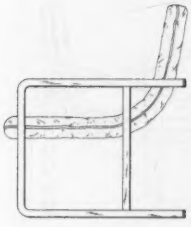
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



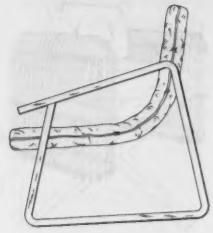
249,843
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,615
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



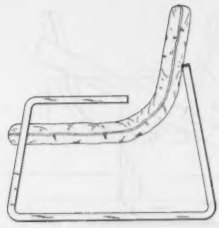
249,844
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,894
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



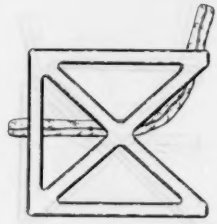
249,845
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,899
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



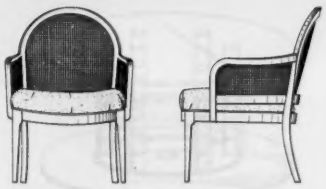
249,846
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Aug. 9, 1976, Ser. No. 712,903
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



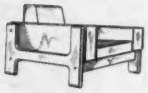
249,847
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,624
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



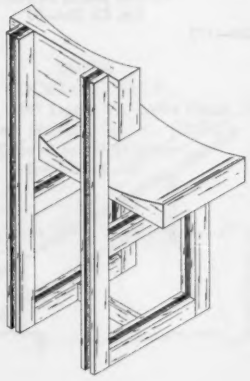
249,848
ARMCHAIR
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,680
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70



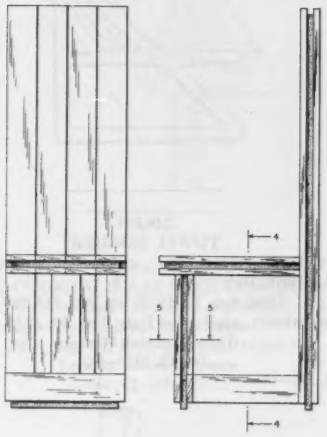
249,849
ARMCHAIR
Armin E. Schoeller, 4271 SE. Marine Dr., Burnaby, B. C., Canada
Filed Aug. 20, 1976, Ser. No. 716,213
Claims priority, application Canada, Feb. 24, 1976, 2402763
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



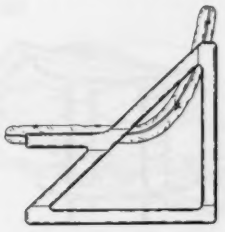
249,850
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,601
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



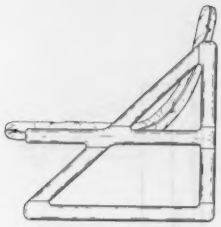
249,851
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,605
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



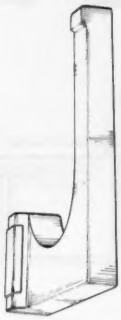
249,852
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,609
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



249,853
CHAIR
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,610
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75

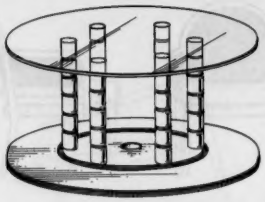


249,854
TOWEL HOLDER
Giovanni Baldini, Turin, Italy, assignor to Carrara & Matta S.p.A., Turin, Italy
Filed Aug. 17, 1976, Ser. No. 715,080
Claims priority, application Italy, Feb. 24, 1976, 52982 B/76
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99

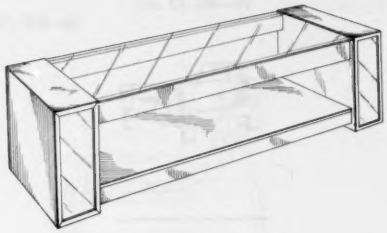


249,855
TABLE
Kevin Charles Levell, 1570 N. Edgemont St., Los Angeles, Calif. 90027
Filed Jul. 19, 1976, Ser. No. 706,682
Term of patent 3 years
Int. Cl. D6—*03*
U.S. Cl. D6—148

249,856
CIRCULAR TABLE
Kevin Charles Levell, 1570 N. Edgemont St., Los Angeles, Calif. 90027
Filed Aug. 2, 1976, Ser. No. 710,677
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—148



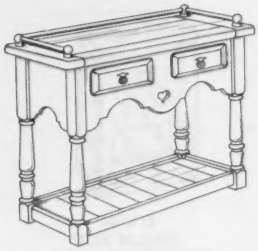
249,857
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,681
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



249,858
TABLE
Steven Douglas Gageby, 12 Hay Camp Rd., North Oaks, Minn. 55110
Filed Apr. 16, 1976, Ser. No. 677,604
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

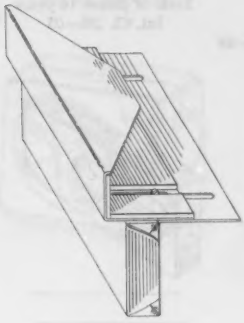
249,859
TABLE
Armin E. Schoeller, 4271 SE. Marine Dr., Burnaby, B. C., Canada
Filed Aug. 20, 1976, Ser. No. 716,212
Claims priority, application Canada, Feb. 24, 1976, 2402762
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

249,860
TABLE
Nicholas Ungaro, Louisville, Ky., assignor to Peters-Revington Corporation, Delphi, Ind.
Filed Nov. 10, 1976, Ser. No. 740,578
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



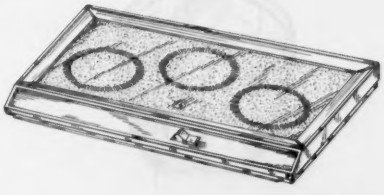
249,861
COCKTAIL TABLE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Jan. 12, 1977, Ser. No. 758,682
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179

249,862
ARM REST
Willard C. Knight, 2777 Sherman Blvd., Fort Wayne, Ind. 46808
Filed Feb. 11, 1977, Ser. No. 767,815
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194

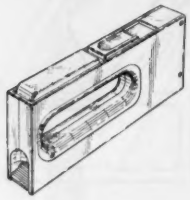


249,863
ELECTRIC COOKING PLATE WITH MIDDLE SENSOR
Karl Fischer, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Geraete Blanc und Fischer
Filed Aug. 19, 1976, Ser. No. 716,010
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121

249,864
WARMING TRAY
Frederick Gordon Mackay, Tarzana, Calif., and Horace Ted Keryluk, Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.
Filed Oct. 26, 1976, Ser. No. 735,315
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—122

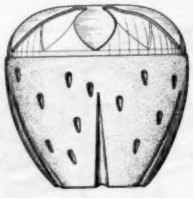


249,865
STAPLE TACKER
Owen Mortimer Wright, Swansea, Wales, assignor to Ofrex Group Limited, London, England
Filed Apr. 26, 1977, Ser. No. 791,160
Claims priority, application United Kingdom, Oct. 26, 1976, 977649/76
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—49

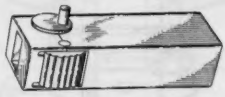


249,866
BOTTLE
Ieuan Richard Felix, Wirral, England, assignor to Lilly Industries, Ltd., London, England
Filed Jun. 21, 1976, Ser. No. 698,620
Claims priority, application United Kingdom, Dec. 19, 1975, 973713/75
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—130

249,867
DUSTING POWDER CONTAINER
Michael Reich, Mamaroneck, N.Y., assignor to New York Pencil Company, Inc., Long Island City, N.Y.
Filed Dec. 13, 1976, Ser. No. 749,871
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—203

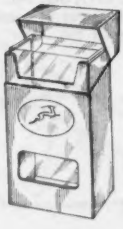


249,868
CANDY DISPENSER
Frank Russert, Palos Heights, Ill., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Jun. 7, 1976, Ser. No. 693,403
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

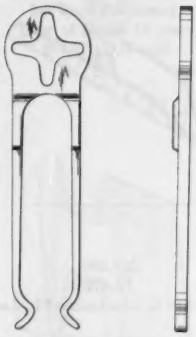


249,869
CONTAINER FOR LINGERIE OR THE LIKE
Thomas Tillander, Brooklyn, N.Y., assignor to Koret, Inc., New York, N.Y.
Filed Jul. 26, 1976, Ser. No. 708,381
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

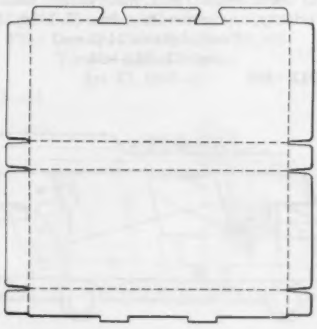
249,870
CONTAINER FOR LINGERIE OR THE LIKE
Thomas Tillander, Brooklyn, N.Y., assignor to Koret, Inc., New York, N.Y.
Filed Jul. 26, 1976, Ser. No. 708,382
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224



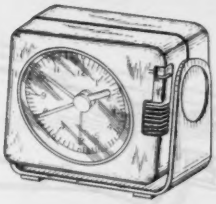
249,871
LOCK SECURING DEVICE
Geoffrey N. Cannon, London, Canada, assignor to Geoffrey Cannon Enterprises, Inc., London, Canada
Filed Dec. 17, 1976, Ser. No. 751,908
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343



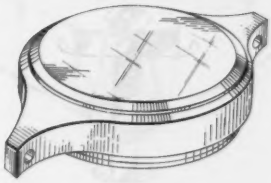
249,872
BOX BLANK
Vernard S. Booth, Albany, Ga.; Everett A. Coons, West Monroe, La., and Billy W. Oswalt, Albany, Ga., assignors to Olinkraft, Inc.
Filed Oct. 19, 1976, Ser. No. 733,783
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



249,873
ELECTRIC CLOCK
Fritz Eduard Zabransky, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 8, 1975, Ser. No. 620,581
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26

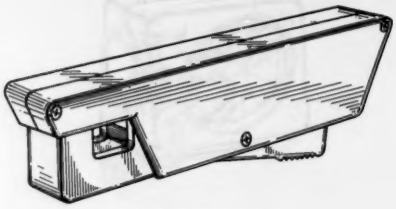


249,874
DIGITAL WRIST WATCH
William James Lawrence, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 12, 1976, Ser. No. 731,601
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



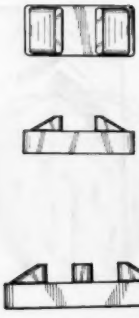
249,875
LADDER INCLINOMETER
Paul Bumbal, 175 Pinehurst Ave., New York, N.Y. 10033, and John V. Mizzi, 12 Wagon Wheel Rd., Poughkeepsie, N.Y. 12601
Filed Jul. 23, 1976, Ser. No. 708,107
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69

249,876
INDUCTIVE CLAMP
David E. Maxwell, Cary; James R. Shaffer, Mt. Prospect, and Lee Radtke, Lake Zurich, all of Ill., assignors to Sun Electric Corporation, Chicago, Ill.
Filed Nov. 24, 1976, Ser. No. 744,696
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—79

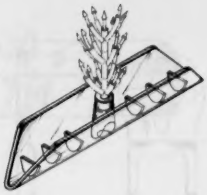


249,877
PENDANT
Gerald Shambrook, R.F.D. 1, Roberts, Ill. 60962
Filed Dec. 1, 1976, Ser. No. 746,253
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—61

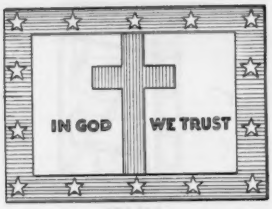
249,878
RING GUARD INSERT
Edward B. A. Sokoloski, 404 W. Verona Ave., Verona, Wis. 53593
Filed Oct. 6, 1976, Ser. No. 730,280
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—86



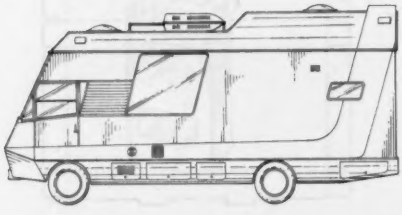
249,879
ANCHOR FOR ARTIFICIAL AQUARIUM PLANT
Allan H. Willinger, 315 E. 84th St., New York, N.Y. 10028, assignor to Willinger Bros., Inc., New York, N.Y.
Filed Jun. 13, 1977, Ser. No. 806,085
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D11—146



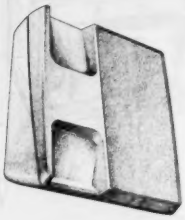
249,880
FLAG
Elizabeth R. Starr, 615 S. Manhattan Pl., Los Angeles, Calif. 90005
Continuation-in-part of Ser. No. 681,428, Apr. 29, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,783
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—175

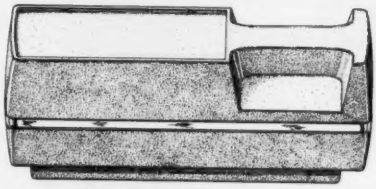


249,881
MOTOR HOME
Francesco Ginoulhiac, via Colle Aperto 38, 24100 Bergamo, Italy
Filed Jan. 21, 1977, Ser. No. 761,334
Claims priority, application Italy, Jun. 25, 1976, 21813/76[U]
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—100

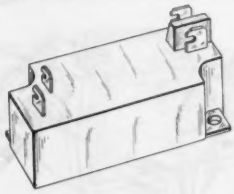


249,882
TELEPHONE STAND
Donald Michael Genaro, Haworth, N.J.; John Niel McGarvey, Drexel Hill, Pa., and Gordon Elliot Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Division of Ser. No. 604,592, Aug. 14, 1975, which is a continuation-in-part of Ser. No. 469,855, May 14, 1974, Pat. No. Des. 237,506, which is a continuation-in-part of Ser. No. 424,413, Dec. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 364,704, May 29, 1973, abandoned. This application Sep. 23, 1977, Ser. No. 836,206
The portion of the term of this patent subsequent to Nov. 4, 1989, has been disclaimed.
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—61

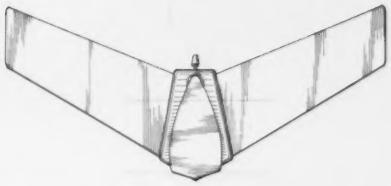




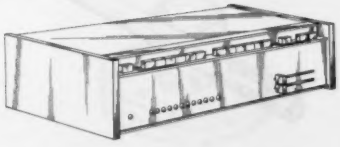
249,883
SOLID STATE RELAY
Howard William Collins, Santa Ana, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.
Filed Dec. 29, 1976, Ser. No. 755,355
Term of patent 14 years
Int. Cl. D13—*33*
U.S. Cl. D13—33



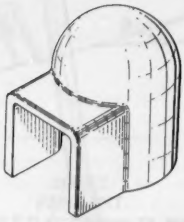
249,884
ANTENNA
Harry Greenberg, Kerhonkson, N.Y., assignor to Avnet, Inc., Ellenville, N.Y.
Filed Jun. 9, 1976, Ser. No. 694,141
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86



249,885
ENCLOSURE FOR HIGH FIDELITY AUDIO REPRODUCTION EQUIPMENT
Richard E. Defreitas, Westford; Peter W. Mitchell, Charlestown; Peter D. Tribeman, Sharon; Samuel Wilensky, Concord, and Joseph L. Boucher, Tewksbury, all of Mass., assignors to Hybrid Systems Corporation, Bedford, Mass.
Filed Sep. 13, 1976, Ser. No. 722,797
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96



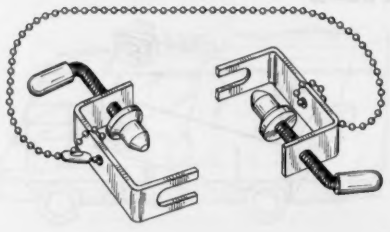
249,886
FOUNDRY RISER SLEEVE
Tony William Bastock, Sandbach, England, assignor to Foseco International Limited, United Kingdom
Filed Jun. 13, 1977, Ser. No. 806,163
Claims priority, application United Kingdom, Mar. 3, 1977, 978747/77
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—135



249,887
STYLOGRAPHIC PEN
Gerold Anderka, Ellerbek; Ulrich Reif, Duesseldorf, and Herbert Wolder, Hamburg, all of Fed. Rep. of Germany, assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.
Filed Feb. 22, 1977, Ser. No. 770,490
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1976, 10292
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—43

249,888
WRITING INSTRUMENT
James E. Barnes, Woodside, N.Y., assignor to The Gillette Company, Boston, Mass.
Filed Jan. 15, 1976, Ser. No. 649,531
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51

249,889
HYDRAULIC LINE PLUG CLAMP UNIT
Ferdinando DeAmicis, 6401 Oliver Ave. South, Richfield, Minn. 55423
Filed Aug. 4, 1976, Ser. No. 711,512
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40

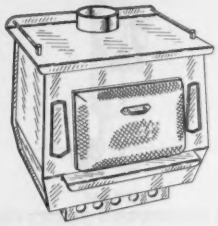


249,890

WOOD BURNING STOVE WITH SCREEN

Roger A. Chinn; Edna A. Chinn, both of Tigard; John E. Blaser, Tualatin, and Keith N. Bender, Aloha, all of Oreg., assignors to Roger's Fireplace Shoppe, Inc., Tigard, Oreg.

Filed Oct. 14, 1977, Ser. No. 842,377
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

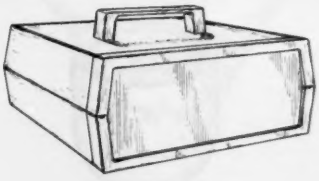


249,891

OXYGEN ANALYZER HOUSING

Robert O. Rowland, Hemet, and Miguel A. Ruksenas, Fallbrook, both of Calif., assignors to Hudson Oxygen Therapy Sales Company, Temecula, Calif.

Filed Dec. 6, 1976, Ser. No. 747,922
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

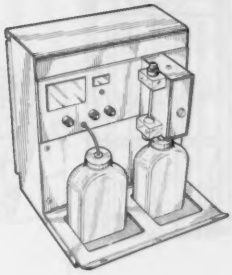


249,892

GLUCOSE ANALYZER

Robert J. Aul, Perrysburg; Philip J. Breno, Oregon; Wayne J. Zitkus; Barry Watson, both of Toledo, all of Ohio, and Paul R. Maguire, Los Angeles, Calif., assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 604,406, Aug. 13, 1975, abandoned. This application Aug. 25, 1976, Ser. No. 717,777
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21

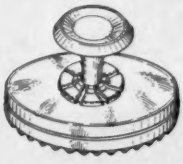


249,893

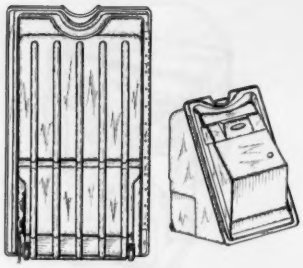
FACIAL MUSCLE EXERCISER

Verna Marie Armbruster, 14671 Fieldstone Dr., Saratoga, Calif. 95070, and Betty Stratton Hasbrouck, 5511 Sharon La., San Jose, Calif. 95124

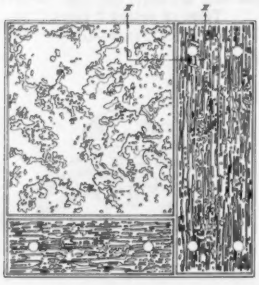
Filed Sep. 17, 1977, Ser. No. 724,241
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



249,894
STEAM CABINET HOUSING
Thomas J. Brancaccio, Atlantic Beach, and Bernardo P. Ragone, Lido Beach, both of N.Y., assignors to Vitamaster Industries, Inc., Brooklyn, N.Y.
Filed Jan. 28, 1977, Ser. No. 763,425
Term of patent 14 years
Int. Cl. D23—*02*; D24—*99*
U.S. Cl. D24—37

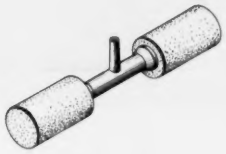


249,895
CEILING TILE OR SIMILAR ARTICLE
Ronald F. Oleski, 36 Brandt Blvd., Landisville, Pa. 17538, assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Oct. 14, 1976, Ser. No. 732,524
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—97



249,896
SMOKING DEVICE
Roger Graham, 5218 Monroe Pl., Hyattsville, Md. 20781
Filed Jan. 16, 1976, Ser. No. 649,701
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

249,897
AIR STONE
Allan H. Willinger, New York, N.Y., assignor to Willinger Bros., Inc., New York, N.Y.
Filed Jul. 15, 1977, Ser. No. 816,071
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—12



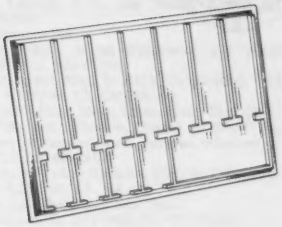
249,898
COMBINED FEED TROUGH AND SUPPORT
George O. Chaires, P.O. Box 5175, Tallahassee, Fla. 32301
Filed Feb. 2, 1977, Ser. No. 764,940
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16

249,899
CROSS
Phillip L. Nally, 302 W. Muir, Bardstown, Ky. 40004
Filed Nov. 3, 1976, Ser. No. 738,353
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D99—27

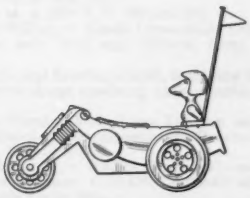
249,900
TRAVELERS CHECK DISPENSING MACHINE
Robert E. Lee, Lewisboro, N.Y., assignor to American Express Company, New York, N.Y.
Filed Feb. 16, 1977, Ser. No. 769,058
Term of patent 14 years
Int. Cl. D31—*99*
U.S. Cl. D99—28

249,901
THROAT PIECE FOR TENNIS RACKET
Jackson Tse, Bellevue, Wash., assignor to Chin America Corp., Redmond, Wash.
Filed Dec. 3, 1976, Ser. No. 747,373
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST

249,902
CARD-GAME DISPLAY BOARD
Walter Zawicki, and Stephanie S. Zawicki, both of 322 N. Main St., Moscow, Pa. 18444
Filed Dec. 29, 1976, Ser. No. 755,334
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—13 A



249,903
TOY MOTORCYCLE
Michael C. Cartabiano, Seekonk, Mass., assignor to Child Guidance Playthings, Inc., New York, N.Y.
Filed Jan. 24, 1977, Ser. No. 761,708
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN

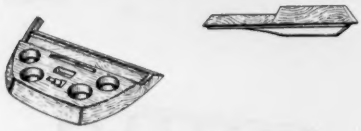


249,904

AUTOMOTIVE CONSOLE TRAY

Daniel M. Monopoli, 65 East Palatine Rd., Wheeling, Ill. 60090

Filed Sep. 20, 1976, Ser. No. 725,039
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D87—1 R

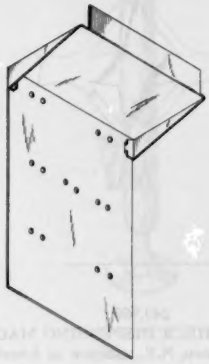


249,905

SIGN HOLDER FOR USE WITH PERFORATED DISPLAY BOARD

Ray Galazzo, Staten Island, N.Y., assignor to Daido Corporation, Piscataway, N.J.

Filed Nov. 8, 1976, Ser. No. 739,570
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 A



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TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Duda and Sons: *See*—
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A. H. Robins Company, Inc.: *See*—
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AB Vardeskydd: *See*—
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Abbott, Liston; Beakley, Guy Ward; and Flory, Robert Earl, to RCA Corporation. System for passing two color TV signals through non-linear path. 4,120,001, Cl. 358-11.000.

Abe, Yoshihiko; Okabe, Isao; and Shirota, Atsushi, to Mitsubishi Seiko Kabushiki Kaisha. Method for manufacturing hardened machined parts. 4,119,443, Cl. 148-12.100.

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Abendroth, Paul: *See*—
Reiser, Kurt; and Abendroth, Paul, 4,119,035, Cl. 101-459.000.

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Adams, Dustin Stetson; Field, Frederick C., Jr.; and Layton, James Ronald, to Du Pont de Nemours, E. I., and Company. Yarn of entangled fibers. 4,118,921, Cl. 57-140.00R.

Adams, Jack C. Incineration system and method. 4,119,046, Cl. 110-244.000.

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Gould, Russell J.; and Adams, Karl G., 4,119,449, Cl. 156-73.500.

Addy, Tralance O.; and Gutman, David P., to Scott Paper Company. Method for minimizing the accumulation of static charges on fibers resulting from fiberization of pulp lap sheets. 4,118,832, Cl. 19-304.000.

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Agcaoili, Clarito R., to United States Gypsum Company. Carpet kicker having means for adjusting shank length. 4,119,338, Cl. 294-8.600.

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Lemaitre, Gerard R., 4,119,366, Cl. 350-295.000.

Agence Nationale de Valorisation de la Rechere (ANVAR): *See*—
Alais, Pierre, 4,119,938, Cl. 340-1.00R.

AGFA-Gevaert Aktiengesellschaft: *See*—
Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, 4,119,464, Cl. 96-68.000.

AGFA-Gevaert N.V.: *See*—
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AGL Corporation: *See*—
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Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, to BASF Aktiengesellschaft. Manufacture of concentrated aqueous solutions of formaldehyde. 4,119,673, Cl. 260-603.00C.

Aihara, Mitsuo, to Tokyo Shibaura Electric Company, Ltd. Electronic calculator. 4,120,040, Cl. 364-709.000.

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Aizenberg, Julian Borisovich; Bukhman, Inokh Borukhovich; Pyatigorsky, Vladimir Mikhailovich; and Solomatina, Natalia Mikhailovna. Lighting installation. 4,120,024, Cl. 362-96.000.

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Akune, Mikio: *See*—
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Albulescu, Peter; and McMahon, Joseph F., to Gulf Oil Corporation; and Standard Oil Company (Indiana). Method and apparatus for recovery of fluids produced in in-situ retorting of oil shale. 4,119,349, Cl. 299-2.000.

Alden, John M., to Alden Research Foundation. Facsimile cassette with wire electrode. 4,119,975, Cl. 346-145.000.

Alden Research Foundation: *See*—
Alden, John M., 4,119,975, Cl. 346-145.000.

Aldrich, Francis William, to Bendix Corporation, The. Friction material reinforced with steel and cellulose fibers. 4,119,591, Cl. 260-17.200.

Aldrich, William L.; and Sawruk, John M., to General Motors Corporation. Engine with charge equalizing intake manifold. 4,119,067, Cl. 123-52.0MB.

Alenrot, Lennart; Hartung, Willy; Lund, Torbjorn; and Aberg, Ulf, to Rockwool Aktiebolaget. Arrangement for fibration of molten mineral. 4,119,421, Cl. 65-14.000.

Alesandrini, Carlo G., Jr., to Stauffer Chemical Company. Production of ethyl chlorothioformate. 4,119,659, Cl. 260-455.00R.

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Alexander, Robert R.: *See*—
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Ali Ja'afar, Hamedo; and Iseman, Walter J., to Sundstrand Corporation. Container closure having opening means. 4,119,238, Cl. 220-211.000.

Allegheny Ludlum Industries, Inc.: *See—*
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Allen, Floyd; and Benderly, Asaf A., to United States of America, Army. Controlled activation of reserve power supplies. 4,119,038, Cl. 102-207.000.

Allen Organ Company: *See—*
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Allen, Roy A.; and Scott, LeRoy W., to Shell Oil Company. Curable epoxy-carboxylic acid adducts. 4,119,609, Cl. 528-99.000.

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Allis-Chalmers Corporation: *See—*
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Heian, Glenn A., 4,119,393, Cl. 425-222.000.
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Alto Automotive, Inc.: *See—*
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Alton Box Board Company: *See—*
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Aluminium Pechiney: *See—*
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Aluminum Company of America: *See—*
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Anderson, John Alfred; and Hebden, Dennis, to British Gas Corporation. Coal gasification plant. 4,119,411, Cl. 48-62.00R.

Andersson, Bengt Heimer. Collapsible ladder. 4,119,177, Cl. 182-195.000.

Andersson, Goran, to BBC Aktiengesellschaft Brown, Boveri & Cie. Regulation system for a steam turbine installation. 4,118,935, Cl. 60-662.000.

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Ando, Yoshikazu; and Yokozato, Junichi, to Zenza Bronica Industries, Inc. View finder for reflex camera. 4,119,985, Cl. 354-223.000.

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Asserback, Rolf Arne Conrad. Method and apparatus for forming hollow concrete elements. 4,119,695, Cl. 264-314.000.

Atkin, Michael Frank, to General Instrument Corporation. Multi-frequency receiver circuits. 4,119,808, Cl. 179-84.0VF.

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Ayotte, Richard F.; and Jones, Trevor O., to General Motors Corporation. Dual-vehicle operating system. 4,119,166, Cl. 180-14.00R.

Azuhata, Shigeru; Kikuchi, Hideo; Akimoto, Hidetoshi; Hishinuma, Yukio; and Arikawa, Yoshijiro, to Hitachi, Ltd. Process for abating concentration of nitrogen oxides in combustion flue gas. 4,119,702, Cl. 423-235.000.

B. F. Goodrich Company, The: *See*—
Carpino, John Steven, 4,119,588, Cl. 260-5.000.
Kroenke, William Joseph; and Nicholas, Paul Peter, 4,119,570, Cl. 252-466.00J.
Murphy, Walter Thomas, 4,119,592, Cl. 260-18.0PF.

B.H.B. Engineers Pty. Ltd.: *See*—
Bowra, Cyril Embley, 4,119,165, Cl. 180-14.00A.

Baatz, Gunther; Dahm, Manfred; and Schafer, Walter, to Bayer Aktiengesellschaft. Production of microcapsules, and the resulting microcapsules. 4,119,565, Cl. 252-316.000.

Babcock & Wilcox Company, The: *See*—
Dopp, James Wellington, 4,119,215, Cl. 214-1.0BB.

Babjak, Juraj: *See*—
Ettel, Victor Alexander; and Babjak, Juraj, 4,119,539, Cl. 210-73.00R.

Baer, Ralph H.: *See*—
Morrison, Howard J.; Fletchic, Donald K.; and Baer, Ralph H., 4,119,844, Cl. 250-231.00R.

Bagger en Grond (Amsterdam Ballast Dredging) Ballast-Nedam Groep N. V.: *See*—
van Zeggelaar, Gerrit Hendrik, 4,118,990, Cl. 73-714.000.

Bahl, Horst H.: *See*—
Owen, A. B.; Gifford, Bruce M.; Bahl, Horst H.; and Akins, Lewis F., 4,118,850, Cl. 29-243.520.

Bahrampour, Ali-Reza: *See*—
Sekhavat, Ali; and Bahrampour, Ali-Reza, 4,119,173, Cl. 181-122.000.

Baillot, Pierre; and Berthet, Pierre, to Aluminium Pechiney. Process and device for cleaning the butts of worn anodes from an igneous electrolysis cell. 4,119,505, Cl. 204-67.000.

Bainard, Dean R.; and Denton, Dennis N., to Garlock Inc. Bi-directional hydrodynamic shaft seal method. 4,118,856, Cl. 29-511.000.

Baird, William C., Jr.; and Bearden, Roby, Jr., to Exxon Research & Engineering Co. Hydroconversion of residua with potassium sulfide. 4,119,528, Cl. 208-108.000.

Bakardjiev, Vassil Dimitrov; and Doychinov, Emil Assenov, to Institute po Zavaryavane. Device for producing pulses for the ignition and stabilization of an electric-arc process. 4,119,829, Cl. 219-130.400.

Baker, Don R.; and Walker, Francis H., to Stauffer Chemical Company. 3-Halo-5-(lower alkoxy) phenoxy alkyl amides. 4,119,433, Cl. 71-118.000.

Baker, James G., to Polaroid Corporation. Prism camera. 4,119,980, Cl. 354-150.000.

Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., to Rohm and Haas Company. Migration-resistant binder compositions for bonding nonwoven fibers; also methods and articles. 4,119,600, Cl. 260-29.6RW.

Balakirev, Efim Stepanovich; Bogomolova, Galina Ilinichna; Gershenovich, Abram Iosifovich; and Gruzdeva, Irina Viktorovna. Process for producing alkali salts of alkylsulphonic acids. 4,119,661, Cl. 260-513.00R.

Baldwin, John J., to Merck & Co., Inc. Certain quaternary ammonium-3-cyanopyridines. 4,119,630, Cl. 260-294.900.

Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. 3-Amino-2-oxy-propoxy-substituted isothiazoles. 4,119,718, Cl. 424-248.510.

Baldwin, John J., to Merck & Co., Inc. Substituted (3-loweralkylamino-2-rio-propoxy)pyridines, their preparation and use. 4,119,721, Cl. 424-263.000.

Baldwin, Roger A.; and Bills, John L., to Kerr-McGee Corporation. Processes for the production of deashed coal. 4,119,523, Cl. 208-8.000.

Baldwin, Roger A.: *See*—
Leonard, Robert E.; and Baldwin, Roger A., 4,119,524, Cl. 208-8.000.

Ball, Douglas. Curb climbing wheel chair. 4,119,163, Cl. 180-6.500.

Ballendux, Gerardus M.; and Kolacz, Ferdynand, to Allis-Chalmers Corporation. Shift control detent mechanism. 4,119,119, Cl. 137-868.000.

Bamburg, Robert A.: *See*—
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,119,263, Cl. 229-17.00B.

Bambury, Ronald E.; Edwards, Michael L.; and Miller, Laird F., to Richardson-Merrell Inc. 4-Oxo-1-pyridinyl cephalosporin derivatives. 4,119,775, Cl. 544-28.000.

Baratin, Andre N., to Jeumont-Schneider. Subscriber's line equipment for a telephone exchange. 4,119,806, Cl. 179-18.0FA.

Barber, Lloyd L.; and Koppelman, Alan J., to Standard Precision, Inc. Self-aligning drawer slide tab. 4,119,377, Cl. 312-344.000.

Barber, William Austin: *See*—
Whitman, Robert Henry; and Barber, William Austin, 4,119,474, Cl. 106-65.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See*—
Schippers, Heinz; Dammann, Peter; and Bauer, Karl, 4,118,843, Cl. 28-255.000.

Barosi, Aldo, to S.A.E.S. Getters S.p.A. Nuclear reactor fuel element employing Zr_2Ni as a getter metal. 4,119,488, Cl. 176-68.000.

Barril, Claude. Furniture frames. 4,119,286, Cl. 248-188.000.

Bartel, William J.; Burton, Robert S., III; and Cha, Chang Yul, to Occidental Oil Shale, Inc. In situ oil shale retorting process using introduction of gas at an intermediate location. 4,119,345, Cl. 299-2.000.

Bartl, Herbert: *See*—
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.

Barton, Paul, to International Standard Electric Corporation. Scanning beam navigational beacon with transmitted coherence reference signal and thinned two-dimensional phased array. 4,119,969, Cl. 343-108.00M.

Bartoo, George O., to Quaker Oats Company, The. Toy elevator safety override drive mechanism. 4,118,886, Cl. 46-1.00R.

Bartsch, Raymond C., to National Distillers and Chemical Corporation. Vinyl acetate catalyst. 4,119,567, Cl. 252-430.000.

Barwick, Bryan Edwin; and Sneath, Michael Edwin, to Thomas J. Lipton, Inc. Process of preparing simulated fruit. 4,119,739, Cl. 426-573.000.

BASF Aktiengesellschaft: *See*—
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.
Baumann, Hans; and Oberlinner, Andreas, 4,119,622, Cl. 260-162.000.
Beck, Fritz; Wurmb, Rolf; and Boehlke, Klaus, 4,119,767, Cl. 429-105.000.
Epple, Gerhard; Himmele, Walter; and Fliege, Werner, 4,119,644, Cl. 260-345.90R.
Hansen, Guenter; Kaack, Hermann; and Grund, Norbert, 4,119,621, Cl. 260-158.000.
Weitz, Hans-Martin; Fischer, Rolf; and Broecker, Franz Josef, 4,119,665, Cl. 260-561.00A.

Bashforth, George Charles. Fuels. 4,119,506, Cl. 204-72.000.

Batz, Hans-Georg: *See*—
Horn, Jurgen; Batz, Hans-Georg; and Jaworek, Dieter, 4,119,589, Cl. 260-6.000.

Bauer, Karl: *See*—
Schippers, Heinz; Dammann, Peter; and Bauer, Karl, 4,118,843, Cl. 28-255.000.

Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of hydroxybenzaldehydes. 4,119,671, Cl. 260-600.00R.

Bauer, Ronald S.; and Lopez, John A., to Shell Oil Company. Low-temperature epoxy baking compositions. 4,119,595, Cl. 260-21.000.

Baumann, Hans; and Oberlinner, Andreas, to BASF Aktiengesellschaft. Pyrazolonylazoaniline or aminonaphtyl compounds for copying processes. 4,119,622, Cl. 260-162.000.

Bayard, Michel Lucien, to Texas Instruments Incorporated. Photovoltaic battery. 4,119,768, Cl. 429-111.000.

Bayer Aktiengesellschaft: *See*—
Baatz, Gunther; Dahm, Manfred; and Schafer, Walter, 4,119,565, Cl. 252-316.000.
Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, 4,119,671, Cl. 260-600.00R.
Dieterich, Dieter, 4,119,658, Cl. 260-453.0AR.
Hoffmann, Hellmut; Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,119,715, Cl. 424-216.000.
Hugl, Herbert; Otten, Hans-Gunter; Sommer, Richard; and Wolfrum, Gerhard, 4,119,623, Cl. 260-206.000.
Reischl, Artur; Klussmann, Henning; and Velker, Eugen, 4,119,613, Cl. 526-64.000.
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.
Schroeder, Josef, 4,119,634, Cl. 260-307.00D.

Bayer, Karlheinz; Dreiseitl, Walter; and Blaschke, Felix, to Siemens Aktiengesellschaft. Circuit for forming an electrical quantity which is proportional to a flux component in a rotating field machine. 4,119,893, Cl. 318-178.000.

Baylor, John M.: *See*—
Schuck, Paul R.; and Baylor, John M., 4,119,157, Cl. 172-477.000.

Bayraktaroglu, Burhan: *See*—
Hartnagel, Hans Ludwig; and Bayraktaroglu, Burhan, 4,119,993, Cl. 357-23.000.

Baytzner-Coulthard Dokumentations und Werbefilm GmbH: *See*—
Coulthard, James Albert, 4,118,903, Cl. 52-36.000.

BBC Aktiengesellschaft Brown, Boveri & Cie: *See*—
Andersson, Goran, 4,118,935, Cl. 60-662.000.

Beach, David Easton, to Eastman Kodak Company. Shutter release mechanism. 4,119,987, Cl. 354-268.000.

Beakley, Guy Ward: *See*—
Abbott, Liston; Beakley, Guy Ward; and Flory, Robert Earl, 4,120,001, Cl. 358-11.000.

Beaman, George R.: *See*—
Moore, Donald K.; Beaman, George R.; Hightower, John D.; and Graham, Craig W., Jr., 4,119,941, Cl. 340-5.00R.

Beane, Frank T. Drain line and method of installing. 4,118,940, Cl. 405-174.000.

Bearden, Roby, Jr.: *See*—
Baird, William C., Jr.; and Bearden, Roby, Jr., 4,119,528, Cl. 208-108.000.

Beatrice Foods Co.: *See*—
Stupec, Gertraud B., 4,119,742, Cl. 426-641.000.

Beavers, John Andrew; and Dillion, Billy O., to Borg-Warner Corporation. Bearing arrangement for elongated electric motors. 4,119,874, Cl. 310-90.000.

Beck, Fritz; Wurmb, Rolf; and Boehlke, Klaus, to BASF Aktiengesellschaft. Secondary battery. 4,119,767, Cl. 429-105.000.

Becker, Herbert, to Metallwerk Max Brose & Co. Window lifting mechanism. 4,118,893, Cl. 49-348.000.

Beckley, Don A., to Hitco. Fusion laminated high-temperature fabric. 4,119,481, Cl. 156-272.000.

Beckman Instruments, Inc.: *See—*
Mehaffy, Gordon E.; and Sawa, Kenneth B., 4,119,120, Cl. 137-885.000.

Beckmann, Uwe L.; and Osterland, Edmund, to W & G Instruments, Inc. Keyboard mask for general-purpose calculator. 4,119,839, Cl. 235-145.00R.

Beecham Group Limited: *See—*
Watts, Eric Alfred, 4,119,643, Cl. 260-345.200.
Wootton, Gordon, 4,119,726, Cl. 424-274.000.

Behrendt, Artur: *See—*
Abelitis, Andris; Behrendt, Artur; and Hinterkeuser, Jakob, 4,119,396, Cl. 432-106.000.

Belcher, James E.: *See—*
Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., 4,119,358, Cl. 339-111.000.

Bell Telephone Laboratories Incorporated: *See—*
Camlibel, Irfan; and Rich, Theodore Charles, 4,119,363, Cl. 350-96.200.

Belmont, Norman J. Railroad hotbox indicator. 4,119,284, Cl. 246-169.00A.

Belouet, Christian: *See—*
Brissot, Jean-Jacques Lucien Emile; Belouet, Christian; and Martres, Rene, 4,119,744, Cl. 427-45.000.

Belozerov, Jury Nikolaevich: *See—*
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.

Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich. Method for processing activated sludge into useful products. 4,119,495, Cl. 195-102.000.

Belyakova, Zoya Vasilievna: *See—*
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.

Benderly, Asaf A.: *See—*
Allen, Floyd; and Benderly, Asaf A., 4,119,038, Cl. 102-207.000.

Bendix Corporation, The: *See—*
Aldrich, Francis William, 4,119,591, Cl. 260-17.200.
Keating, Patrick N.; Koppelman, Roger F.; and Sawatari, Takeo, 4,119,940, Cl. 340-5.00H.

Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; and Benkoe, Erwin, 4,119,315, Cl. 273-85.00F.
Goldfarb, Adolph E.; and Benkoe, Erwin, 4,119,319, Cl. 273-237.000.

Bennett, James A., to Will Ross, Inc. Container divider and dispensing assembly. 4,119,264, Cl. 229-15.000.

Bennett, William F., to Marketing Information Systems Incorporated. Apparatus for selectively printing and applying labels to articles of different sizes and shapes. 4,119,482, Cl. 156-351.000.

Benson, Gustav E., to Owens-Corning Fiberglas Corporation. Method and apparatus for controlling the advancement of a strand. 4,119,253, Cl. 226-7.000.

Berecz, Imre, to Microdot Inc. Barrel nut and method of manufacture. 4,119,130, Cl. 151-41.760.

Bergmann, Rolf: *See—*
Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, 4,119,631, Cl. 260-295.00A.

Bergwerksverband, G.m.b.H.: *See—*
Sander, Rolf; and Oberste-Beulmann, Klaus, 4,119,350, Cl. 299-87.000.

Berke, Herbert, to United States of America, Navy. Programmable charge coupled device timing system. 4,119,916, Cl. 328-62.000.

Berlizova, Roza Petrovna: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Bernacki, Stephen E., to Massachusetts Institute of Technology. Non vacuum soft x-ray lithographic source. 4,119,855, Cl. 250-402.000.

Bernard, Vincent E., to Jimmy Dean Meat Company, Inc., The. Portion controlled frozen food. 4,119,252, Cl. 225-96.000.

Bernewasser, Horst: *See—*
Scholl, Hans; and Bernewasser, Horst, 4,119,048, Cl. 112-121.120.

Bernhard, William F.: *See—*
Porier, Victor L.; and Bernhard, William F., 4,118,806, Cl. 3-1.400.

Bernstein, Seymour: *See—*
Conrow, Ransom Brown; and Bernstein, Seymour, 4,119,784, Cl. 560-44.000.

Bernzomatic Corporation: *See—*
Avant, Richard H., 4,119,153, Cl. 169-75.000.

Berthet, Pierre: *See—*
Baillot, Pierre; and Berthet, Pierre, 4,119,505, Cl. 204-67.000.

Bertsch, Lyle E. Swimming pool structure and method of erecting the same. 4,118,809, Cl. 4-172.190.

Bevacqua, Louis Albert, to Motorola Inc. Tuning display mechanism for multiband pushbutton tunable receiver. 4,118,991, Cl. 74-10.330.

Bianchini, Pearl N. Braille lens for telephone dials. 4,119,809, Cl. 179-90.00A.

Bianco, Carlo. Method for making a sanitary product. 4,119,450, Cl. 156-199.000.

Bieber, William J. Automatic transmission shifter. 4,118,999, Cl. 74-475.000.

Bier, Gerhard: *See—*
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Bihlmaier, Eugen, to Daimler-Benz Aktiengesellschaft. Load-dependent four-circuit brake system especially for commercial vehicles. 4,119,353, Cl. 303-22.00R.

Bijttebier, Gaspar A. Method and apparatus for separating and processing a plurality of supple sheets in a single operation. 4,119,306, Cl. 270-58.000.

Bikbau, Marsel Yanovich: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.

Bills, John L.: *See—*
Baldwin, Roger A.; and Bills, John L., 4,119,523, Cl. 208-8.000.

Bings, Hubert: *See—*
Thome, Roland; Bings, Hubert; and Obermaier, Hans, 4,119,707, Cl. 423-592.000.

Bio-Dynamics, Inc.: *See—*
Goldstein, Robert H.; and Stahl, Robert M., 4,119,407, Cl. 422-58.000.

Biosearch Medical Products Inc.: *See—*
Micklus, Michael J.; and Ou-Yang, David T., 4,119,094, Cl. 128-132.00R.

Bishop, Marilyn. Tamperproof sterile port cover and method of making same. 4,119,128, Cl. 150-8.000.

Bisping, Heinz; and Schiefer, Erwin, to Hilti Aktiengesellschaft. Pipe and cable clip. 4,119,285, Cl. 248-72.000.

Bisping, Heinz: *See—*
Schiefer, Erwin; and Bisping, Heinz, 4,118,838, Cl. 24-115.00R.

Bite, Pal: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.

Bittler, Dieter: *See—*
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, 4,119,626, Cl. 260-239.55C.

Bivens, David J., to Bivens Winchester Corporation. Car washing apparatus with long shallow angle side brush. 4,118,820, Cl. 15-53.0AB.

Bivens Winchester Corporation: *See—*
Bivens, David J., 4,118,820, Cl. 15-53.0AB.

BJ-Hughes Inc.: *See—*
Sheldon, Loren B.; and Tomashek, James R., 4,119,837, Cl. 235-92.0MP.

Blaine, James: *See—*
Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, 4,119,160, Cl. 175-67.000.

Blair, Noel D., to Hooker Chemicals & Plastics Corp. Anti-corrosion weldable coatings. 4,119,763, Cl. 428-563.000.

Blaschke, Felix: *See—*
Bayer, Karlheinz; Dreiseitl, Walter; and Blaschke, Felix, 4,119,893, Cl. 318-178.000.

Blatte, Michael: *See—*
Jacob, Herbert; Blatte, Michael; and Kremser, Fritz, 4,119,704, Cl. 423-299.000.

Blau, Harry. Collar stay system. 4,118,803, Cl. 2-132.000.

Blaw-Knox Foundry & Mill Machinery, Inc.: *See—*
Eibe, Werner E., 4,118,963, Cl. 72-21.000.

Bleyle, Merrill, to W. R. Grace & Co. Cross-linking resin saturant and method. 4,119,746, Cl. 427-381.000.

Blinne, David L.: *See—*
Macht, Jon A.; and Blinne, David L., 4,119,225, Cl. 214-145.00A.

Block and Company, Inc.: *See—*
Block, Mitchell L.; and Pane, Angelo, 4,118,962, Cl. 70-455.000.

Block, Mitchell L.; and Pane, Angelo, to Block and Company, Inc. Obturator for safe deposit boxes and the like. 4,118,962, Cl. 70-455.000.

Blocker, William C. Seal for LP gas cylinder valve. 4,119,295, Cl. 251-144.000.

Blom, Rolland D., to Electric Terminal Corporation. Method and device for loading stock into a machine. 4,119,214, Cl. 214-1.0BD.

Bloomfield, Jordan J.; and Owsley, Dennis C., to Monsanto Company. Polycyclic alcohol perfume compositions. 4,119,575, Cl. 252-522.000.

Blumenberg, Horst H.; and Guzowski, Kenneth A., to Zenith Radio Corporation. Unitized electron gun having electrodes with internal beam-shielding tubes. 4,119,884, Cl. 313-417.000.

Bockrath, Thomas A., to Hughes Aircraft Company. Linear polarization selective screen. 4,119,932, Cl. 333-21.00A.

Boe, Thomas Jerald; Fell, Charles M.; and Jenkins, William Leon, to A.

Duda and Sons. Portable pallet strapping device. 4,119,023, Cl. 100-2.000.

Boehlke, Klaus: *See*—
Beck, Fritz; Wurmb, Rolf; and Boehlke, Klaus, 4,119,767, Cl. 429-105.000.

Boehringer Ingelheim GmbH: *See*—
Engelhardt, Gunther; Ke..., Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,119,728, Cl. 424-324.000.

Boehringer Mannheim GmbH: *See*—
Horn, Jurgen; Batz, Hans-Georg; and Jaworek, Dieter, 4,119,589, Cl. 260-6.000.

Bogner, Richard D.; and King, Leonard H. Dipole-slot type omnidirectional transmitting antenna. 4,119,970, Cl. 343-727.000.

Bogomolova, Galina Ilinichna: *See*—
Balakirev, Efim Stepanovich; Bogomolova, Galina Ilinichna; Gershenovich, Abram Iosifovich; and Gruzdeva, Irina Viktorovna, 4,119,661, Cl. 260-513.00R.

Boiko, Anatoly Alexeevich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Bolduc, Lee R.; and Dickhudt, Eugene A., to Population Research Incorporated. Material dispensing apparatus. 4,119,098, Cl. 128-235.000.

Bolotnikov, Arkady Leonidovich: *See*—
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, 4,119,828, Cl. 219-121.00P.

Bolton, Jack Curtis; and Alexander, Franklin Leroy, to Union Carbide Corporation. Fluid transfer apparatus. 4,119,114, Cl. 137-318.000.

Bonhomme, Francois Robert. Connector for printed circuit boards. 4,119,357, Cl. 339-75.0MP.

Bonnaud, Bernard; and Fagnoni, Yves, to Rhone-Poulenc Industries. Pulverulent compositions based on vinyl chloride. 4,119,601, Cl. 260-29.60R.

Boochever, Evelyn; and Munk, Michael. Enthalpy control for an environmental humidification and cooling system. 4,118,945, Cl. 62-176.00C.

Boozalis, Theodore S.; and Ivy, John B., to Dow Chemical Company, The. Process for production of 1,1,1-trichloroethane and vinylidene chloride. 4,119,674, Cl. 260-658.00R.

Borden, Inc.: *See*—
Golner, Jerold Julius; Miller, William Joseph; and Strout, Russell Brown, 4,119,251, Cl. 225-20.000.

Borg-Warner Corporation: *See*—
Beavers, John Andrew; and Dillion, Billy O., 4,119,874, Cl. 310-90.000.
Fogelberg, Mark John, 4,119,168, Cl. 180-49.000.

Borom, Marcus P.: *See*—
Arendt, Ronald H.; Huseby, Irvin C.; and Borom, Marcus P., 4,119,437, Cl. 134-3.000.

Boron, Joseph J., to Rossborough Manufacturing Co. Bottom fill sampling apparatus. 4,118,988, Cl. 73-425.40R.

Borsy, Jozsef: *See*—
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.

Bosch, Richard A.; and Straatmann, John A., to Youngstown Sheet and Tube Company. High strength alloy of ferritic structure. 4,119,445, Cl. 148-36.000.

Bosnjak, Milovan, to Buttes Gas & Oil Co. Sugar refining process. 4,119,436, Cl. 127-61.000.

Bosselaers, Robert Jan, to RCA Corporation. Frequency synthesizer with frequency modulated output. 4,119,925, Cl. 331-1.00A.

Boucher, John L. Nail cleaner. 4,119,439, Cl. 134-183.000.

Bourquard, Pierre, to Pibor S.A. Push-button assembly and manufacturing method. 4,118,923, Cl. 58-88.00B.

Bouvier, David William; Brenner, Charles H.; and Butler, Walker, to Motorola Inc. Clutter discriminating apparatus for use with pulsed doppler radar systems and the like. 4,119,966, Cl. 343-7.700.

Bowers, George W., to Information Terminals Corporation. Diskette door. 4,120,012, Cl. 360-133.000.

Bowra, Cyril Embley, to B.H.B. Engineers Pty. Ltd. Articulated vehicles. 4,119,165, Cl. 180-14.00A.

Bowser, George C.: *See*—
Schneider, Alan Arthur; and Bowser, George C., 4,119,769, Cl. 429-112.000.

Boyd, David G.: *See*—
Denton, Dennis N.; and Boyd, David G., 4,119,324, Cl. 277-134.000.

Boyd, Violet; Fishwick, Brian Ribbons; and Watson, David John, to Imperial Chemical Industries Limited. Disperse monoazo dyestuffs. 4,119,624, Cl. 260-207.100.

Boyer, John A.; Cross, Robert; Kovacs, Ernest; and Valentino, Ralph J., to Western Electric Company, Inc. Method and apparatus for transferring articles while re-establishing their orientation. 4,119,211, Cl. 214-1.0BH.

Boyer, Peter W.: *See*—
Nusbaumer, Kay T.; and Boyer, Peter W., 4,119,017, Cl. 92-108.000.

BP Chemicals Limited: *See*—
Cane, Charles; and Yeomans, Bertram, 4,119,553, Cl. 560-198.000.

Bradbery, Jack L.: *See*—
Marin, Allan; and Bradbery, Jack L., 4,119,810, Cl. 179-90.00K.

Braddock, Peter David Michael: *See*—
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,653, Cl. 260-429.00R.
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,654, Cl. 260-429.00R.

Braid, Milton, to Mobil Oil Corporation. Reaction product of nickel thiobis(alkylphenolate) and thiobis(alkylphenol) and organic compositions containing the same. 4,119,548, Cl. 252-42.700.

Brandenstein, Manfred: *See*—
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,119,187, Cl. 192-98.000.

Brashear, Otto S., Jr.; Hund, Clifford L.; and Wehrenberg, Thomas M., to Corning Glass Works. Rebonded fusion-cast AZS refractory grain. 4,119,472, Cl. 106-57.000.

Braun, Martin: *See*—
Vogtmann, Lothar; Braun, Martin; and Kregl, Josef, 4,119,256, Cl. 226-177.000.

Braus, Harry; and Woltermann, Jay R., to National Distillers and Chemical Corporation. Flame retardant compositions. 4,119,789, Cl. 560-161.000.

Brazhnikov, Nikolai Ivanovich. Method of and device for controlling gas-liquid or liquid-liquid interface in monolayer reservoirs. 4,118,983, Cl. 73-290.00V.

Breckheimer, Hans, to Demag AG. Screw compressor with axially displaceable motor. 4,119,392, Cl. 418-201.000.

Breidenbach, Hans: *See*—
Pfeil, Christian; and Breidenbach, Hans, 4,119,016, Cl. 91-449.000.

Breiing, Alois: *See*—
Dietrich, Albert; and Breiing, Alois, 4,119,299, Cl. 254-159.000.

Brenner, Charles H.: *See*—
Bouvier, David William; Brenner, Charles H.; and Butler, Walker, 4,119,966, Cl. 343-7.700.

Bressanelli, Jerome P.: *See*—
Pinnow, Kenneth E.; and Bressanelli, Jerome P., 4,119,765, Cl. 428-683.000.

Brickhouse, Preston E.; and Dunlap, Clinton B. Portable chair tub. 4,118,810, Cl. 4-173.00R.

Bridgestone Liquefied Gas Co. Ltd.: *See*—
Furuta, Kazuhisa, 4,119,241, Cl. 220-439.000.

Bright, Robert Harding, to Koppers Company, Inc. Method for preventing coal spills. 4,119,226, Cl. 214-152.000.

Bright, Roselie Ann: *See*—
Hsieh, Dean Shui-Tien; Bright, Roselie Ann; and Rha, ChouKyun, 4,119,733, Cl. 426-46.000.

Brilakis, Antony A. Programmable question and answer device. 4,118,876, Cl. 35-9.00A.

Brissot, Jean-Jacques Lucien Emile; Belouet, Christian; and Martres, Rene, to U.S. Philips Corporation. Method of manufacturing semiconductor devices in which a layer of semiconductor material is provided on a substrate. 4,119,744, Cl. 427-45.000.

British Gas Corporation: *See*—
Anderson, John Alfred; and Hebden, Dennis, 4,119,411, Cl. 48-62.00R.
Carruthers, Alec Reginald, 4,119,115, Cl. 137-318.000.

Brody, Mitchell D. Thermal energy meter. 4,118,979, Cl. 73-193.00R.

Broecker, Franz Josef: *See*—
Weitz, Hans-Martin; Fischer, Rolf; and Broecker, Franz Josef, 4,119,665, Cl. 260-561.00A.

Brola, Gabriel, to Enterprise Industrielle de Chaudronnerie. Process and apparatus for transforming heat at a relatively low temperature into power or energy. 4,118,934, Cl. 60-647.000.

Brooks & Perkins, Incorporated: *See*—
Karzmar, Ronald C.; and Stamm, Robert H., 4,119,859, Cl. 250-507.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Watanabe, Tomoyoshi; Yasui, Tsuneo; Ishikawa, Shigeo; and Okada, Kiyomichi, 4,119,385, Cl. 400-215.300.

Brow, Gaylord T.: *See*—
Moroco, Philip A.; and Brow, Gaylord T., 4,119,302, Cl. 256-48.000.

Brower, Loyd R., Jr.; Madsen, Leonard P.; and Zutaut, Chesley L., to Standard T Chemical Company, Inc. Nozzle apparatus for electrophoretic coating of interior surfaces. 4,119,522, Cl. 204-300.0EC.

Brown, Alfred. *See*—
Wu, Ching H.; Brown, Alfred; and Hall, Wilbur L., 4,119,149, Cl. 166-266.000.

Brown, Delmont D., to D. S. Brown Company, The. Pavement joint structures. 4,119,387, Cl. 404-69.000.

Brown, Douglas Burthum, to Stake Technology Ltd. Method and apparatus for conveying particulate material. 4,119,025, Cl. 100-35.000.

Brown, Merle S.: *See*—
Arzberger, William A.; and Brown, Merle S., 4,119,191, Cl. 194-9.00T.

Brown & Williamson Tobacco Corporation: *See*—
Flaherty, Kenneth A., 4,119,196, Cl. 206-271.000.

Roth, David S., 4,119,104, Cl. 131-2.000.
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., to Exxon Production Research Company. Stressed caisson retained island. 4,118,941, Cl. 405-204.000.
Bruggemann & Brand KG: *See—*
Fengels, Gerd, 4,118,840, Cl. 24-239.000.
Brunnmueller, Fritz: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.
Brunswick Corporation: *See—*
Schildbach, August J., 4,118,845, Cl. 29-33.00K.
Brussels, Nathan E., to Solar Energy Systems, Inc. Storage tank assembly. 4,119,086, Cl. 126-271.000.
Brutlag, Minehart, to Raymond Lee Organization, Inc., The, a part interest. Mattress carrying device. 4,119,250, Cl. 224-49.000.
Bucher, Adolf. Spiral staircase. 4,118,908, Cl. 52-185.000.
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., to Polaroid Corporation. Method of making a flat battery. 4,118,860, Cl. 29-623.500.
Buell, David N.: *See—*
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,119,047, Cl. 112-79.0FF.
Buendia, Jean; Nierat, Jeanine; and Deroy, Robert, to Roussel Uclaf. Novel 11-desoxy-prostaglandin F_2 derivatives. 4,119,727, Cl. 424-275.000.
Bukhman, Inokh Borukhovich: *See—*
Aizenberg, Julian Borisovich; Bukhman, Inokh Borukhovich; Pyatigorsky, Vladimir Mikhailovich; and Solomatina, Natalia Mikhailovna, 4,120,024, Cl. 362-96.000.
Bun, Isaak Mozesovich: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.
Bundy, Gordon L., to Upjohn Company, The. ω-Aryl-9-deoxy-9-methylene-PGF-type compounds. 4,119,649, Cl. 260-408.000.
Bundy, Gordon L., to Upjohn Company, The. Inter-oxa-9-deoxy-PGF compounds. 4,119,663, Cl. 562-503.000.
Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-9-deoxy-9-methylene-PGF-type compounds. 4,119,666, Cl. 260-563.00R.
Burkl, Erich: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,119,187, Cl. 192-98.000.
Burmistrova, Ljubov Mikhailovna: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.
Burndy Corporation: *See—*
Noschese, Rocco James, 4,119,818, Cl. 200-50.0AA.
Burnham, Peter B., to Harsco Corporation. Telescopic tow guard for a dock board. 4,118,817, Cl. 14-71.300.
Burroughs Corporation: *See—*
Seitz, Charles Lewis; and Grunewald, Paul, 4,119,954, Cl. 340-324.0AD.
Su, Chauchang, 4,120,043, Cl. 364-900.000.
Burton, Robert S., III: *See—*
Bartel, William J.; Burton, Robert S., III; and Cha, Chang Yul, 4,119,345, Cl. 299-2.000.
Bushnell, Dwight J.: *See—*
Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, 4,119,160, Cl. 175-67.000.
Busler, Willard Leroy, to AMP Incorporated. Packaging and assembly of sheet metal parts. 4,118,859, Cl. 29-622.000.
Bussjager, Rudy C.: *See—*
Lord, Richard G.; Bussjager, Rudy C.; and Geary, David F., 4,118,944, Cl. 62-98.000.
Butler, J. Clinton; and Kubala, Sidney W. Portable article carrier. 4,119,248, Cl. 224-5.00W.
Butler, Walker: *See—*
Bouvier, David William; Brenner, Charles H.; and Butler, Walker, 4,119,966, Cl. 343-7.700.
Buttes Gas & Oil Co.: *See—*
Bosnjak, Milovan, 4,119,436, Cl. 127-61.000.
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, to Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Tekhnologichesky Institut Elektrosvarochnogo Oborudovania. Method of plasma multiarc welding by permanently burning direct-current arcs. 4,119,828, Cl. 219-121.00P.
Bykov, Vladimir Petrovich: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.
Cable, Jesse F., III: *See—*
Perkins, Carroll R.; Cable, Jesse F., III; and Link, Joseph, 4,120,022, Cl. 361-395.000.
Cableform Limited: *See—*
Morton, John; and Stevens, Keith Drummond, 4,119,898, Cl. 318-341.000.
Cahill, Robert F. Water collection indicator device. 4,119,056, Cl. 116-118.00A.
Calderon, Arthur, to Control Data Corporation. Ion beam generator having concentrically arranged frustoconical accelerating grids. 4,119,881, Cl. 313-360.000.
Cale, Albert Duncan, Jr., to A. H. Robins Company, Inc. 4-Hydroxymethyl-2-pyrrolidinones. 4,119,637, Cl. 260-326.5FL.
California Cooperage: *See—*
Conger, William W., IV, 4,119,686, Cl. 261-77.000.
California Institute of Technology: *See—*
Rembaum, Alan; and Wallace, Carl J., 4,119,581, Cl. 521-27.000.
Calo, Seraphin Bernard: *See—*
Lewis, Henry Garton, Jr.; and Calo, Seraphin Bernard, 4,119,945, Cl. 340-146.1AQ.
Camlibel, Irfan; and Rich, Theodore Charles, to Bell Telephone Laboratories Incorporated. Package for optical devices including optical fiber-to-metal hermetic seal. 4,119,363, Cl. 350-96.200.
Campana, Patsie Carmen. Fabricated coke oven door. 4,119,496, Cl. 202-248.000.
Campbell, Frank A. Rail bracing system. 4,119,271, Cl. 238-336.000.
Canadian Patents & Development Limited: *See—*
Tucker, Helen G.; Tanney, John W.; and Hayes, William F., 4,118,973, Cl. 73-55.000.
Cane, Charles; and Yeomans, Bertram, to BP Chemicals Limited. Process for the production of esters in the presence of a pyridine base. 4,119,553, Cl. 560-198.000.
Canon Kabushiki Kaisha: *See—*
Ichiyanagi, Toshikazu, 4,118,922, Cl. 58-23.0BA.
Capozza, Richard Carl, to Alza Corporation. Polymeric orthoesters. 4,119,579, Cl. 526-270.000.
Capps, Grover H., to Trucksafe, Inc. Jackknife restraining mechanism. 4,119,330, Cl. 280-432.000.
Carad, Inc.: *See—*
Cass, Boyd E.; Coate, David W.; and Quigley, Joseph R., 4,119,455, Cl. 75-25.000.
Carbonnel, Henri; and Chaminade, Francois, to Groupement pour les Activites Atomiques et Avancees. Insulating ceramic substances having controlled porosity and the method for preparing them by sintering. 4,119,469, Cl. 106-40.00R.
Carborundum Company, The: *See—*
Ehrenreich, Leo C., 4,119,189, Cl. 192-107.00M.
Carl Hurth Maschinen- und Zahnradfabrik: *See—*
Eichinger, Johann, 4,118,996, Cl. 74-404.000.
Loos, Herbert; Heckmaier, Manfred; and Reichert, Gerhard, 4,119,014, Cl. 90-1.60R.
Seitz, Max, 4,119,013, Cl. 90-1.000.
Carleton, William Arthur: *See—*
Mower, Michael Lee; Carleton, William Arthur; and Packard, Gary Richard, 4,119,184, Cl. 192-82.00T.
Carlson, Frank A., to Alton Box Board Company. Container incorporating partially opened protective end cells. 4,119,201, Cl. 206-424.000.
Carlsson, Erik Herbert; and Karlsson, John Axel, to Aktiebolaget Overums Bruk. Adjustable tip for plough share. 4,119,158, Cl. 172-704.000.
Carmel Energy, Inc.: *See—*
Sperry, John S.; Krajicek, Richard W.; and Cradeur, Robert R., 4,118,925, Cl. 60-39.050.
Carosio, Sam. Analgesic and anti-inflammatory composition. 4,119,713, Cl. 424-95.000.
Carpino, John Steven, to B. F. Goodrich Company, The. Reversion resistant rubber compositions with thio carbamyl sulfenamides. 4,119,588, Cl. 260-5.000.
Carr, Robert J.: *See—*
Hermanson, Gerald P.; Rickel, David M.; and Carr, Robert J., 4,119,448, Cl. 156-73.400.
Carrier Corporation: *See—*
Lord, Richard G.; Bussjager, Rudy C.; and Geary, David F., 4,118,944, Cl. 62-98.000.
Carruthers, Alec Reginald, to British Gas Corporation. Stopping fluid flow in pipes. 4,119,115, Cl. 137-318.000.
Carson, John Robert, to McNeil Laboratories, Incorporated. Preparation of 5-aroylpyrrole-2-acetic acid derivatives. 4,119,639, Cl. 260-326.350.
Carter, Dwight: *See—*
Wolf, Cecil R., 4,119,133, Cl. 160-209.000.
Carter, Ray L. Animal trap holder. 4,118,885, Cl. 43-97.000.
Carvalko, Joseph R.; and Tolmie, Robert J., Jr., to Pitney-Bowes, Inc. System for controlling concentration of developer solution. 4,119,989, Cl. 354-298.000.
Cary, John T., to Continental Group, Inc., The. Apparatus for forming an end finish on a hollow article. 4,119,394, Cl. 425-390.000.
Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, to International Business Machines Corporation. Electrically reprogrammable transversal filter using charge coupled devices. 4,120,035, Cl. 364-602.000.
Cass, Boyd E.; Coate, David W.; and Quigley, Joseph R., to Carad, Inc. Method of recovering iron-bearing by-product flue dust. 4,119,455, Cl. 75-25.000.
Cassidy, Raymond T.; and St. Amand, Robert, to National Blank Book Company, Inc. Tape cassette holder. 4,119,200, Cl. 206-387.000.
Castleman, B. Wayne; and Schluter, Bernard C., to Honeywell Inc.

Apparatus and a method for detecting and measuring trace gases in air or other gas backgrounds. 4,119,851, Cl. 250-382.000.
Catalyst Research Corporation: *See*—
Schneider, Alan Arthur; and Bowser, George C., 4,119,769, Cl. 429-112.000.
Caterpillar Tractor Co.: *See*—
Hopkins, Donald L., 4,119,169, Cl. 180-66.00R.
Cates, Robert E., to Marley Cooling Tower Company, The. Air cooled atmospheric heat exchanger. 4,119,140, Cl. 165-67.000.
Cave, Ellis K., to Arcadia Refining Company. Flowmeter. 4,118,981, Cl. 73-194.0EM.
Ceca S.A.: *See*—
Duboc, Jean; and Poitier, Bernard, 4,118,836, Cl. 24-73.0SA.
Central Glass Co., Ltd.: *See*—
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.
CER: *See*—
Rifflart, Jacques, 4,119,155, Cl. 172-311.000.
Cera International Limited: *See*—
Alexander, Robert Osteen, 4,119,108, Cl. 134-62.000.
Cha, Chang Yul: *See*—
Bartel, William J.; Burton, Robert S., III; and Cha, Chang Yul, 4,119,345, Cl. 299-2.000.
Chambley, Phillip W.: *See*—
Norris, Alan H.; and Chambley, Phillip W., 4,118,842, Cl. 28-218.000.
Chambley, Phillip Wayne; and Norris, Alan Hedley, to Champion International Corporation. Dielectric heat generator. 4,119,826, Cl. 219-10.810.
Chaminade, Francois: *See*—
Carbonnel, Henri; and Chaminade, Francois, 4,119,469, Cl. 106-40.00R.
Champion International Corporation: *See*—
Chambley, Phillip Wayne; and Norris, Alan Hedley, 4,119,826, Cl. 219-10.810.
Dempster, Thomas B., 4,119,266, Cl. 229-39.00R.
Norris, Alan H.; and Chambley, Phillip W., 4,118,842, Cl. 28-218.000.
Chang, Fung Yuel: *See*—
Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,120,035, Cl. 364-602.000.
Chang, Richard C.: *See*—
Smith, Frank C., Jr.; and Chang, Richard C., 4,119,580, Cl. 521-28.000.
Charles, Richard J.: *See*—
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,475, Cl. 106-73.500.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,689, Cl. 264-65.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,690, Cl. 264-65.000.
Chaspec Manufacturing Co., The: *See*—
Peckar, George E., 4,119,204, Cl. 206-521.000.
Chazard, Georges Jean Paul; and Seugnet, Monique, to Colgate Palmolive Company. Concentrated fabric softening composition. 4,119,545, Cl. 252-8.800.
Chellis, Fred Freeman, to Cryogenic Technology, Inc. Refrigeration system with magnetic linkage. 4,118,943, Cl. 62-6.000.
Chen, Thomas T., to Rockwell International Corporation. Two dimensional stretcher detector. 4,120,046, Cl. 365-8.000.
Chepigo, Sergei Vladimirovich: *See*—
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.
Chesbeuf, Bernard: *See*—
Daeninckx, Jean; and Chesbeuf, Bernard, 4,119,578, Cl. 252-548.000.
Chevron Research Company: *See*—
Moore, Joseph E., 4,119,722, Cl. 424-270.000.
Chibana, Masanobu: *See*—
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.
Chicago Bridge & Iron Company: *See*—
Orndorff, James Allen, Jr., 4,119,051, Cl. 114-249.000.
Chichester Partridge Limited: *See*—
Partridge, Anthony John, 4,119,091, Cl. 128-92.00B.
Chimicasa GmbH: *See*—
Deininger, Rolf; and Wolf, Erich, 4,119,730, Cl. 424-341.000.
Chin, Te Ning, to RCA Corporation. Cathode for flat panel display. 4,119,882, Cl. 313-411.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT.: *See*—
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Chirana, koncern: *See*—
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, 4,119,243, Cl. 221-298.000.
Chirikjian, Jack G., to Turner, Stephen. Fluorescent derivatives of activated polysaccharides. 4,119,521, Cl. 204-299.00R.
Chloride Group Limited: *See*—
Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, 4,119,772, Cl. 429-204.000.
Cholet, Jacques: *See*—
Layotte, Pierre-Claude; and Cholet, Jacques, 4,118,994, Cl. 74-61.000.
Chorba, Mary Claire; Craig, Peter; and Westergren, Kurt Pierce. Three dimensional game. 4,119,320, Cl. 273-241.000.
Choudhury, Hrishikesh; and Luksch, Heinrich E., to Outboard Marine Corporation. Single lever control having a throttle warm-up lever. 4,119,186, Cl. 192-0.096.
Christenson, Lowell B. Apparatus and method of assisting pile driving by electro-osmosis. 4,119,511, Cl. 204-180.00R.
Chromalloy Alcon, Inc.: *See*—
Linkowski, Stanley A., 4,119,360, Cl. 339-217.00S.
Chubb, Talbot A. Thermal energy storage material comprising mixtures of sodium, potassium and magnesium chlorides. 4,119,556, Cl. 252-70.000.
Ciba-Geigy Corporation: *See*—
Robertson, George Heddle, 4,119,478, Cl. 106-288.00Q.
Schmidlin, Julius, 4,119,625, Cl. 260-239.55D.
Wieland, Peter, 4,119,627, Cl. 260-239.570.
Cillichemie Ernst Vogelmann: *See*—
Preuninger, Manfred; Hollender, Gottfried; and Schaber, Herbert, 4,118,906, Cl. 52-100.000.
Cincinnati Milacron Inc.: *See*—
Stone, Kirby Lee, 4,119,110, Cl. 137-15.000.
Cities Service Company: *See*—
Anderson, Howard A., 4,119,239, Cl. 220-324.000.
Citizen Watch Co. Ltd.: *See*—
Morokawa, Shigeru; and Hashimoto, Yukio, 4,119,867, Cl. 307-225.00C.
Yamazaki, Toru, 4,119,368, Cl. 350-360.000.
Clairol Incorporated: *See*—
Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, 4,119,399, Cl. 8-10.200.
Clapper, Thomas W., to Kerr-McGee Corporation. Bipolar electrode for use in an electrolytic cell. 4,119,519, Cl. 204-268.000.
Clemens, Anton Hubert, to Miles Laboratories, Inc. Calibration apparatus. 4,119,406, Cl. 422-81.000.
Clement, Paul Santas, Jr. Applicator having insertable sponge cartridge. 4,118,824, Cl. 15-244.00R.
Cling-Cal Corporation: *See*—
Kettlestrings, John S., 4,119,316, Cl. 273-95.00R.
Coal Industry (Patents) Limited: *See*—
Gray, Michael David; and Kimber, Geoffrey Michael, 4,119,525, Cl. 208-8.000.
Coate, David W.: *See*—
Cass, Boyd E.; Coate, David W.; and Quigley, Joseph R., 4,119,455, Cl. 75-25.000.
Coates, David; and Gray, George William, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal materials. 4,119,558, Cl. 252-299.000.
Cobb, Keith M.: *See*—
Taylor, James B., Jr.; and Cobb, Keith M., 4,118,858, Cl. 29-622.000.
Codman & Shurtleff, Inc.: *See*—
Reimels, Harry G., 4,118,805, Cl. 3-1.000.
Cohen, Eleanor B.; Stassen, William N.; and Wintgens, James C., to Owens-Corning Fiberglas Corporation. Size compositions for glass fiber reinforced cementitious products. 4,119,477, Cl. 106-99.000.
Cohen, Fredric S.: *See*—
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,118,860, Cl. 29-623.500.
Coldiron, Ronnie Hamilton, to Turf-Tech Inc. Sod cutter. 4,119,002, Cl. 83-120.000.
Coleman, William H.; and Maszk, Francis S., to Westinghouse Electric Corp. Bearing load indicator. 4,118,933, Cl. 73-766.000.
Colgate Palmolive Company: *See*—
Chazard, Georges Jean Paul; and Seugnet, Monique, 4,119,545, Cl. 252-8.800.
Collier, John Covell; and Owen, Leonard John, to AMP Incorporated. Method and tool for applying ties. 4,119,124, Cl. 140-93.200.
Colubev, Alexei Olegovich: *See*—
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.
Combette, Marc; and Ollivier, Jean, to Societe de Prospection et d'Inventions Techniques SPIT. Power actuated tools. 4,119,257, Cl. 227-10.000.
Comer, William T.; and Kreighbaum, William E., to Mead Johnson & Company. Alkylsulfonylphenoxypropanolamine therapeutic process. 4,119,729, Cl. 424-330.000.
Commissariat a l'Energie Atomique: *See*—
Delafosse, Jacques, 4,119,490, Cl. 176-78.000.
Compagnie General d'Electrocite S.A.: *See*—
Michon, Maurice; and Sturel, Bernard, 4,119,928, Cl. 331-94.50P.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Jacob, Jean-Baptiste, 4,119,803, Cl. 179-15.0AT.
Compax Corp.: *See*—
Diggle, Edmund A., Jr., 4,118,841, Cl. 26-18.600.
Comperatore, John A., to PPG Industries, Inc. Method and apparatus for shaping glass sheets on a bending mold. 4,119,424, Cl. 65-107.000.

Compressor Controls Corporation: *See*—
Rutshtein, Alexander; and Staroselsky, Naum, 4,119,391, Cl. 417-26.000.
Compton, William A., to International Harvester Company. Radiation pyrometers. 4,118,985, Cl. 73-346.000.
Conger, William W., IV, to California Cooperage. Hydro-jet fitting for hot tub. 4,119,686, Cl. 261-77.000.
Conn, John L. Cap-less container and/or dispenser. 4,119,245, Cl. 222-465.000.
Conrow, Ransom Brown; and Bernstein, Seymour, to American Cyanamid Company. Anionic substituted sulfonamido biphenyls. 4,119,784, Cl. 560-44.000.
Consonni, Pietro: *See*—
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.
Container Corporation of America: *See*—
Goeppner, Ronald R.; Kuehne, William M.; and Russell, Timothy D., 4,118,972, Cl. 73-40.000.
Pilz, William M., 4,119,197, Cl. 206-279.000.
Continental Disc Corporation: *See*—
Shaw, Kenneth R.; and Hansen, Franklin A., 4,119,236, Cl. 220-89.00A.
Continental Group, Inc., The: *See*—
Cary, John T., 4,119,394, Cl. 425-390.000.
Control Data Corporation: *See*—
Calderon, Arthur, 4,119,881, Cl. 313-360.000.
Convertini, Ursula: *See*—
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, 4,119,483, Cl. 156-655.000.
Cook, Eddie G. Rear window assembly for a truck cab. 4,119,341, Cl. 296-146.000.
Cook, Robert E., to A. O. Smith Corporation. Solar water heating system. 4,119,087, Cl. 126-271.000.
Coopman, Frans: *See*—
Verbauwhede, Germain; and Coopman, Frans, 4,119,748, Cl. 428-36.000.
Corbett, Robert John, to Huck Manufacturing Company. Double action fastener installation tool for blind rivets and the like. 4,118,969, Cl. 72-391.000.
Core Laboratories, Inc.: *See*—
Price, John G. W., 4,119,404, Cl. 23-232.00E.
Corkhill, Robert Edward: *See*—
Wilcox, David Mark; and Corkhill, Robert Edward, 4,119,880, Cl. 313-348.000.
Corning Glass Works: *See*—
Brashear, Otto S., Jr.; Hund, Clifford L.; and Wehrenberg, Thomas M., 4,119,472, Cl. 106-57.000.
Corporate Equipment Company: *See*—
Corso, Anthony Bruce; and Rishel, James Burton, 4,120,033, Cl. 364-510.000.
Corse, Louis Gaston, to Machines Chambon. Apparatus for transversely cutting a web of material. 4,119,003, Cl. 83-341.000.
Corso, Anthony Bruce; and Rishel, James Burton, to Corporate Equipment Company. Apparatus and method for determining pumping system head curves. 4,120,033, Cl. 364-510.000.
Cosenza, Frank J., to Tridair Industries. Fastener with wire-form holdout. 4,119,131, Cl. 151-69.000.
Cosman, Armond D.; and Knippelmier, Gary H., to A. P. C. Industries, Inc. Method for locating buried markers which are disposed along the path of an underground conductor. 4,119,908, Cl. 324-3.000.
Costakis, Andrew L., to National Steel Corporation. Apparatus for electroplating sheet metals. 4,119,515, Cl. 204-211.000.
Cotton, John F.: *See*—
Wien, Raymond E.; Cotton, John F.; and Salemi, Nicholas A., 4,119,935, Cl. 335-167.000.
Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, to U.S. Philips Corporation. Electronic thermostat. 4,119,835, Cl. 219-501.000.
Coulthard, James Albert, to Baytzner-Coulthard Dokumentations und Werbefilm GmbH. Partitions and screens. 4,118,903, Cl. 52-36.000.
Coupling Systems, Inc.: *See*—
Rieffle, Paul F.; and Felker, Charles E., 4,119,335, Cl. 285-337.000.
Coutta, John M. Surveillance system. 4,120,004, Cl. 358-108.000.
Cox, Howard W.: *See*—
Iobst, Stanley A.; and Cox, Howard W., 4,119,594, Cl. 260-18.0TN.
Cradeur, Robert R.: *See*—
Sperry, John S.; Krajicek, Richard W.; and Cradeur, Robert R., 4,118,925, Cl. 60-39.050.
Craig, Gregory C.; and Eckstein, William B., to French Oil Mill Machinery Company, The. Devolatilizing vent. 4,120,050, Cl. 366-75.000.
Craig, Peter: *See*—
Chorba, Mary Claire; Craig, Peter; and Westergren, Kurt Pierce, 4,119,320, Cl. 273-241.000.
Cranberg, Lawrence. Compact long-lived neutron source. 4,119,858, Cl. 250-499.000.
Cray Research, Inc.: *See*—
Roush, Maurice Dean, 4,120,021, Cl. 361-388.000.
Creel, Jack R. Game with board and pieces and dice. 4,119,321, Cl. 273-248.000.
Crespo, Silvio, to Wilbur Chocolate Company, Inc. Cocoa extender. 4,119,740, Cl. 426-631.000.
Criglar, John J.; and Lazarus, Arnold. Pressure transducer for musical instruments. 4,119,007, Cl. 84-1.140.
Crimella, Renato. Automatic toe forming machine for shoes, in particular dancing and gymnastics shoes. 4,118,815, Cl. 12-7.900.
Crist, Eugene A.: *See*—
Kehl, Donald K.; and Crist, Eugene A., 4,118,891, Cl. 47-59.000.
Critchfield, Frank Edward: *See*—
Papa, Anthony Joseph; Rollins, Richard Lee; and Critchfield, Frank Edward, 4,119,584, Cl. 521-127.000.
Crook, Monty Frederick: *See*—
Davis, Bryan Terence; and Crock, Monty Frederick, 4,119,552, Cl. 252-49.600.
Cross, Robert: *See*—
Boyer, John A.; Cross, Robert; Kovacs, Ernest; and Valentino, Ralph J., 4,119,211, Cl. 214-1.0BH.
Crouch, William B.; Fabiero nee Posadas, Carolina P.; and Robin, Allen M., to Texaco Inc. Production of nitrogen-rich gas mixtures. 4,119,566, Cl. 252-372.000.
Crowe, Edward R.: *See*—
DeAngelis, Willie G.; and Crowe, Edward R., 4,119,428, Cl. 65-287.000.
Crucible Inc.: *See*—
Pinnow, Kenneth E.; and Bressanelli, Jerome P., 4,119,765, Cl. 428-683.000.
Cryogenic Technology, Inc.: *See*—
Chellis, Fred Freeman, 4,118,943, Cl. 62-6.000.
Csonka, Albert B.: *See*—
Csonka, John J.; and Csonka, Albert B., 4,119,068, Cl. 123-117.00R.
Csonka, John J.; and Csonka, Albert B. Carburetor for internal combustion engines. 4,119,068, Cl. 123-117.00R.
Cunningham, Michael Paul: *See*—
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, 4,119,466, Cl. 96-115.00R.
Curtis, Brian Matthew, to Perard Engineering Limited. Looped cable control device. 4,119,348, Cl. 299-43.000.
Curvino, Salvatore J.; and Warner, Albert E., to United Technologies Corporation. Automatic stall recovery system. 4,118,926, Cl. 60-39.060.
Cushing, Ernest W. Mop assembly to distribute selected liquids on floor areas, to be waxed, cleaned, and/or stripped. 4,119,386, Cl. 401-138.000.
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Bottom unloading bulk container. 4,119,263, Cl. 229-17.00B.
Cutler-Hammer, Inc.: *See*—
Jaskolski, Stanley V.; Lade, Robert W.; and Schutten, Herman P., 4,119,845, Cl. 250-231.00R.
Cutler, Royal A.: *See*—
Diana, Guy D.; and Cutler, Royal A., 4,119,668, Cl. 260-567.60P.
Czajkowski, George J.; and Stolfa, Frank, to UOP Inc. Moving-bed reactor startup process. 4,119,530, Cl. 208-213.000.
D. H. Baldwin Company: *See*—
Kimble, Thomas E., 4,119,008, Cl. 84-242.000.
D. S. Brown Company, The: *See*—
Brown, Delmont D., 4,119,387, Cl. 404-69.000.
Daeninckx, Jean; and Chesbeuf, Bernard, to L'Oreal. Hydrosoluble bar for use in toilet bowls and method of making same which includes an extrusion step. 4,119,578, Cl. 252-548.000.
Dahlstrom, Baesley I.: *See*—
Hill, James E.; and Dahlstrom, Baesley I., 4,119,270, Cl. 235-440.000.
Dahm, Manfred: *See*—
Baatz, Gunther; Dahm, Manfred; and Schafer, Walter, 4,119,565, Cl. 252-316.000.
Dai Nippon Toryo Co. Ltd.: *See*—
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.
Daicel Ltd.: *See*—
Hayashi, Minoru; and Kishi, Kazuo, 4,119,036, Cl. 102-49.300.
Daimler-Benz Aktiengesellschaft: *See*—
Bihlmaier, Eugen, 4,119,353, Cl. 303-22.00R.
Happel, Robert, 4,119,066, Cl. 123-32.0SP.
Hass, Jurgen, 4,119,178, Cl. 184-1.500.
Dakin, James T.; and Darrow, Kenneth A., to General Electric Company. Liquid-cooled, turbine bucket with enhanced heat transfer performance. 4,119,390, Cl. 416-96.00R.
Dammann, Peter: *See*—
Schippers, Heinz; Dammann, Peter; and Bauer, Karl, 4,118,843, Cl. 28-255.000.
Dana Corporation: *See*—
Duncan, John D., 4,119,914, Cl. 325-446.000.
Danfoss A/S: *See*—
Sorensen, Per Germann, 4,119,894, Cl. 318-221.00D.
D'Angelo, Alexander. Apparatus for automatically dispensing material from a roll. 4,119,255, Cl. 226-136.000.
Danilov, Alexandr Ivanovich: *See*—
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, 4,119,828, Cl. 219-121.00P.
Darrow, Kenneth A.: *See*—
Dakin, James T.; and Darrow, Kenneth A., 4,119,390, Cl. 416-96.00R.
Dataproducts Corporation: *See*—
McMillan, Norman; and Dier, Henry M., 4,119,029, Cl. 101-111.000.

Davidovich, Jury Alexandrovich: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.

Davidovich, Yakov Gilievich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Davies, John F.: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.

Davis, Bryan Terence; and Crook, Monty Frederick, to Edwin Cooper and Company Limited. Lubricant additive. 4,119,552, Cl. 252-49.600.

Davis, Kirk Emerson, to Lubrizol Corporation, The. Sulfurized compositions. 4,119,549, Cl. 252-45.000.

Davis, Kirk Emerson; and Holden, Thomas Frederick, to Lubrizol Corporation, The. Sulfurized compositions. 4,119,550, Cl. 252-45.000.

Davis, Robert E., to Stage-Brite Inc. Cross connect panel having slide switches and bus bar construction. 4,119,816, Cl. 200-1.00R.

Davison, Sol: *See—*
Gergen, William P.; and Davison, Sol, 4,119,607, Cl. 260-40.00R.

Dayron Corporation: *See—*
Hermanson, Gerald P.; Rickel, David M.; and Carr, Robert J., 4,119,448, Cl. 156-73.400.

DeAngelis, Willie G.; and Crowe, Edward R., to PPG Industries, Inc. Apparatus for bending glass sheets. 4,119,428, Cl. 65-287.000.

Deardorf, Eldon N. Perforating apparatus and method for well casing. 4,119,148, Cl. 166-250.000.

Deaven, John B. Portable container convertible to lighted dancing stage. 4,120,025, Cl. 362-153.000.

Debeaux, Alain, to Souriau et Cie. Flowmeters-volumeters. 4,118,980, Cl. 73-194.00C.

DeBerry, David W., to Radian Corporation. Pulsed DC transient conductivity measurement system. 4,119,909, Cl. 324-30.00R.

Debourge, Jean-Claude: *See—*
Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, 4,119,724, Cl. 424-45.000.

Degen, Hugo, to Inpaver AG. Device for inclining the supporting surface of a reclining furniture. 4,118,811, Cl. 5-62.000.

Dehnert, Heinz. Electrocardioscope. 4,119,090, Cl. 128-2.06G.

Deininger, Rolf; and Wolf, Erich, to Chimicasa GmbH. Treating muscle spasms. 4,119,730, Cl. 424-341.000.

de Jong, Jacobus J. A.: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.

de Kremer, Mily; and de Kremer, Peter, to Dolcofin Ltd. Golf ball flight indicating device. 4,119,318, Cl. 273-185.00C.

de Kremer, Peter: *See—*
de Kremer, Mily; and de Kremer, Peter, 4,119,318, Cl. 273-185.00C.

Delafosse, Jacques, to Commissariat a l'Energie Atomique. Nuclear fuel assembly. 4,119,490, Cl. 176-78.000.

De Lamare, Eric P.; and Dudon, Pierre D., to Telediffusion de France. Mechanical artificial reverberation apparatus. 4,119,933, Cl. 333-30.00R.

Delany, Paul Nigel, to Delpack Limited. Palletized containers. 4,119,205, Cl. 206-598.000.

Delea, Anne C.: *See—*
Sansur, Musa M.; Vlastelica, Daniel L.; and Delea, Anne C., 4,119,401, Cl. 23-230.00B.

Delpack Limited: *See—*
Delany, Paul Nigel, 4,119,205, Cl. 206-598.000.

Demag AG: *See—*
Breckheimer, Hans, 4,119,392, Cl. 418-201.000.
Rath, Gero, 4,119,454, Cl. 75-12.000.

De Martelaere, David L. Universal piston pin remover and installer. 4,118,851, Cl. 29-283.000.

Demizu, Hiromi: *See—*
Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, 4,119,060, Cl. 118-653.000.

Dempster, Thomas B., to Champion International Corporation. Octagonal shaped paperboard bulk bin. 4,119,266, Cl. 229-39.00R.

Densen Common, Incorporated: *See—*
Johnson, Dennis Elmer, 4,118,868, Cl. 33-169.00R.

Denton, Dennis N.; and Boyd, David G., to Garlock Inc. Bonded TFE lip seal. 4,119,324, Cl. 277-134.000.

Denton, Dennis N.: *See—*
Bainard, Dean R.; and Denton, Dennis N., 4,118,856, Cl. 29-511.000.

de Putter, Warner Jan, to Wavin B.V. Pipe with an outer foam plastic covering. 4,119,122, Cl. 138-103.000.

de Roos, Kris Bart: *See—*
van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.

Deroy, Robert: *See—*
Buendia, Jean; Nierat, Jeanine; and Deroy, Robert, 4,119,727, Cl. 424-275.000.

Desmond, Timothy F.: *See—*
Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,119,762, Cl. 428-524.000.

Desourdy, Bernard. Pipe laying and transporting vehicle. 4,119,210, Cl. 214-1.0PA.

Desperques-Volmier, Serge, to Thomson-CSF. System for programmed drawing by particle bombardment. 4,119,857, Cl. 250-492.00A.

Dessau, Ralph M.: *See—*
Heiba, El Ahmadi I.; and Dessau, Ralph M., 4,119,646, Cl. 260-346.220.

De Trey, Rene: *See—*
Lendi, Georges; Voinescu, Nicolae; and De Trey, Rene, 4,118,867, Cl. 33-164.00C.

Deutsch Company Electronic Components Division, The: *See—*
Holzman, Melvyn A., 4,119,362, Cl. 350-96.180.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Wagner, Hans; and Maierhofer, Alfred, 4,119,738, Cl. 426-548.000.

Develop KG Dr. Eisbein & Co.: *See—*
Moser, Kurt; Wegmann, Helmut; and Weigele, Reinhold, 4,119,059, Cl. 118-644.000.

Devine, Thomas M., Jr., to General Electric Company. Inertia welding process for making an anode assembly. 4,119,261, Cl. 228-113.000.

Devine, Thomas M., Jr., to General Electric Company. Graphite disc assembly for a rotating x-ray anode tube. 4,119,879, Cl. 313-330.000.

Dewald, Hans. Process and apparatus for removing straws from bottles. 4,119,438, Cl. 134-6.000.

De Yarman, James E. Kite structure. 4,119,283, Cl. 244-153.00A.

Diana, Guy D.; and Cutler, Royal A., to Sterling Drug Inc. N,N'-Bridged-bis[N,N'substituted-2-hydroxy alkaneammonium] salts. 4,119,668, Cl. 260-567.60P.

Dickhudt, Eugene A.: *See—*
Bolduc, Lee R.; and Dickhudt, Eugene A., 4,119,098, Cl. 128-235.000.

Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, to Selenia-Industrie Elettroniche Associate S.p.A. Low thermal loss cryogenic containers for infrared radiation detecting devices, with integrated feed-through connections. 4,118,947, Cl. 62-514.00R.

Diehl, Robert Eugene: *See—*
Levy, Stephen David; and Diehl, Robert Eugene, 4,119,669, Cl. 260-577.000.

Diem, Hans: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.

Diena, Alberto: *See—*
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.

Diener, Erhard Armin. Support and installation jack, hole forming devices and setting tool therefor. 4,119,293, Cl. 249-177.000.

Dier, Henry M.: *See—*
McMillan, Norman; and Dier, Henry M., 4,119,029, Cl. 101-111.000.

Dieterich, Dieter, to Bayer Aktiengesellschaft. Aromatic isocyanatopolysulphonic acids. 4,119,658, Cl. 260-453.0AR.

Dietrich, Albert; and Breiing, Alois, to Dornier Gmbh. Cable drum arrangement with brake. 4,119,299, Cl. 254-159.000.

Dietz, Richard E., to Phillips Petroleum Company. Olefin polymerization catalyst. 4,119,569, Cl. 252-452.000.

Diggle, Edmund A., Jr., to Compax Corp. Apparatus for compacting woven gauze bandages. 4,118,841, Cl. 26-18.600.

Dillion, Billy O.: *See—*
Beavers, John Andrew; and Dillion, Billy O., 4,119,874, Cl. 310-90.000.

Dils, Michael A.: *See—*
Ward, Ernest Michael; Ward, Steven M.; and Dils, Michael A., 4,119,948, Cl. 340-151.000.

Dimigen, Heinz: *See—*
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, 4,119,483, Cl. 156-655.000.

Dionex Corporation: *See—*
Smith, Frank C., Jr.; and Chang, Richard C., 4,119,580, Cl. 521-28.000.

Diszler, Eszter: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.

Dlugopolski, Joseph, to Fidelity Container Corporation. Seamless leakproof container. 4,119,265, Cl. 229-31.00R.

Dobkin, Igor Iosifovich: *See—*
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.

Dr. Ing. Rudolf Hell, GmbH: *See—*
Moellgaard, Klaus; and Sendtko, Ulrich, 4,120,045, Cl. 364-900.000.

Doering, Gerard A. Energy cell device. 4,119,766, Cl. 429-70.000.

Doland, George D.: *See—*
United States of America, National Aeronautics and Space Administration; and Doland, George D., 4,119,972, Cl. 343-844.000.

Dolcofin Ltd.: *See—*
de Kremer, Mily; and de Kremer, Peter, 4,119,318, Cl. 273-185.00C.

Dominion Auto Accessories Limited: *See—*
Nagel, Robert I., 4,120,018, Cl. 362-333.000.

Dopp, James Wellington, to Babcock & Wilcox Company, The. Automatic loading-unloading mechanism for a pot broaching machine. 4,119,215, Cl. 214-1.0BB.

Dornier Gmbh: *See—*
Dietrich, Albert; and Breiing, Alois, 4,119,299, Cl. 254-159.000.

Dow Chemical Company, The: *See—*
Boozalis, Theodore S.; and Ivy, John B., 4,119,674, Cl. 260-658.00R.
Larsen, Eric R.; and Ecker, Ernest L., 4,119,413, Cl. 55-71.000.
Newport, John J., III; and Messick, Bobby G., 4,119,632, Cl. 260-295.00R.

Doychinov, Emil Assenov: *See—*
Bakardjiev, Vassil Dimitrov; and Doychinov, Emil Assenov, 4,119,829, Cl. 219-130.400.

Doyle, Edward J.: *See—*
Laviana, Lawrence J.; Rhodes, Mark H., Jr.; and Doyle, Edward J., 4,119,936, Cl. 337-303.000.

Draizen, Seymour; and Schillebeeckx, Konrad C., to Syncro Machine Company. Continuous long ends wire spooling apparatus. 4,119,278, Cl. 242-25.00A.

Dreiseitl, Walter: *See—*
Bayer, Karlheinz; Dreiseitl, Walter; and Blaschke, Felix, 4,119,893, Cl. 318-178.000.

Dresser Europe S.A. "LeSouverain" Boulevard du Souverain: *See—*
Winkelvoss, Dieter, 4,119,117, Cl. 137-456.000.

Drews, Wolf-Dietrich, to Siemens Aktiengesellschaft. Medical inhalation device for the treatment of diseases of the respiratory tract. 4,119,096, Cl. 128-194.000.

Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, to Gesellschaft fur Kernforschung m.b.H. Method for avoiding malfunctions in the solidification of aqueous, radioactive wastes in a glass, glass ceramic or glass ceramic-like matrix. 4,119,561, Cl. 252-301.10W.

Duboc, Jean; and Poitier, Bernard, to Ceca S.A. Device for fixing the electrodes of electrostatic dust precipitator filters. 4,118,836, Cl. 24-73.0SA.

Dudeck, Christian: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.

Dudon, Pierre D.: *See—*
De Lamare, Eric P.; and Dudon, Pierre D., 4,119,933, Cl. 333-30.00R.

Dumas, Hal S., Jr.: *See—*
Dumas, Sarah J.; and Dumas, Hal S., Jr., 4,119,240, Cl. 220-331.000.

Dumas, Sarah J.; and Dumas, Hal S., Jr. Positive open receptacle. 4,119,240, Cl. 220-331.000.

Duncan, Farris N.: *See—*
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,119,263, Cl. 229-17.00B.

Duncan, John D., to Dana Corporation. Double balanced mixer using single ferrite core. 4,119,914, Cl. 325-446.000.

Dunlap, Clinton B.: *See—*
Brickhouse, Preston E.; and Dunlap, Clinton B., 4,118,810, Cl. 4-173.00R.

Dunlop Limited: *See—*
Popplewell, Frank William; and Houghton, Frank Raymond, 4,119,313, Cl. 273-73.00K.

Du Pont de Nemours, E. I., and Company: *See—*
Adams, Dustin Stetson; Field, Frederick C., Jr.; and Layton, James Ronald, 4,118,921, Cl. 57-140.00R.
Wysong, Robert David, 4,119,604, Cl. 260-33.20R.

Durand, Gilbert; and Monsan, Pierre, to Rhone-Poulenc Industries. Immobilization of enzymes in an anhydrous medium. 4,119,494, Cl. 195-68.000.

Durinck, Rene, to Fives-Cail Babcock. Process and apparatus for manufacturing carbon electrodes. 4,119,692, Cl. 264-71.000.

Durling, Harold, to Midland-Ross Corporation. Air brake system with pressure holding valve. 4,119,351, Cl. 303-6.00M.

Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., to Jim Dandy Company, The. Dispensing head for impregnating meat with a liquid. 4,119,022, Cl. 99-532.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Dynetics Engineering Corp.: *See—*
Hill, James E.; and Dahlstrom, Baesley I., 4,119,270, Cl. 235-440.000.

Dyson, Evelyna Chelsey, to Revlon, Inc. Eyebrow contour guide. 4,118,870, Cl. 33-174.00D.

E. MERCK, Patentabteilung: *See—*
Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, 4,119,631, Cl. 260-295.00A.

E. R. Squibb & Sons, Inc.: *See—*
Gordon, Eric M., 4,119,778, Cl. 544-26.000.

Early, Judson Horace: *See—*
Off, Joseph W. A.; and Early, Judson Horace, 4,119,246, Cl. 223-52.000.

Eastman Kodak Company: *See—*
Beach, David Easton, 4,119,987, Cl. 354-268.000.
Frank, Lee Fitzpatrick; and Lee, James Kelly, 4,119,979, Cl. 354-50.000.
Kolb, Frederick John, Jr., 4,120,011, Cl. 360-111.000.
Lu, Chen-i, 4,119,743, Cl. 427-44.000.
Metzger, Lenard M.; and Johnson, Robert B., 4,120,008, Cl. 360-70.000.
Muka, Edward; and Glover, Clyde Pershing, 4,119,381, Cl. 356-244.000.
Vachon, Raymond N., 4,119,680, Cl. 260-850.000.
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, 4,119,466, Cl. 96-115.00R.
Williams, Robert Franklin, Jr.; and Lu, Chen-i, 4,119,479, Cl. 156-272.000.
Yoerger, William E., 4,119,460, Cl. 96-1.0PC.

Eberle, William J., to General Battery Corporation. Automated post burn station. 4,119,137, Cl. 164-332.000.

Ebner, Peter R., to Itek Corporation. Phototypesetter lens carriage arrangement. 4,119,976, Cl. 354-5.000.

Eckels, Robert E. Building with passive solar energy conditioning. 4,119,084, Cl. 126-270.000.

Ecker, Ernest L.: *See—*
Larsen, Eric R.; and Ecker, Ernest L., 4,119,413, Cl. 55-71.000.

Eckert, Robert C., to Westvaco Corporation. Process for bleaching wood pulp with ozone in the presence of a cationic surfactant. 4,119,486, Cl. 162-65.000.

Eckstein, William B.: *See—*
Craig, Gregory C.; and Eckstein, William B., 4,120,050, Cl. 366-75.000.

Edwall, Nils Erik Gunnar; and Eklund, Goran Sven. Monocrystalline metal electrode and method of use. 4,119,498, Cl. 204-1.00T.

Edwards, Cyril Kenneth; and Webb, Edward Harry, to Thomas Hunter Limited. Closure caps. 4,119,233, Cl. 215-337.000.

Edwards, Harrison F., to Sunbeam Corporation. Fireplace enclosure and integral heat-exchanger. 4,119,081, Cl. 126-140.000.

Edwards, Michael L.: *See—*
Bambury, Ronald E.; Edwards, Michael L.; and Miller, Laird F., 4,119,775, Cl. 544-28.000.

Edwin Cooper and Company Limited: *See—*
Davis, Bryan Terence; and Crook, Monty Frederick, 4,119,552, Cl. 252-49.600.

Ehrenreich, Leo C., to Carborundum Company, The. Reinforced carbon and graphite articles. 4,119,189, Cl. 192-107.00M.

Eibe, Werner E., to Blaw-Knox Foundry & Mill Machinery, Inc. Closed loop integrated gauge and crown control for rolling mills. 4,118,963, Cl. 72-21.000.

Eichinger, Johann, to Carl Hurth Maschinen- und Zahnradfabrik. Reversing gear in particular for a Z-drive for watercrafts. 4,118,996, Cl. 74-404.000.

Eidschun, Charles Douglas, Jr. Continuous contact plater product. 4,119,499, Cl. 204-15.000.

Eiland, P. Frank: *See—*
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,119,047, Cl. 112-79.0FF.

Ekemar, Sven Karl Gustav; and Fischer, Udo Karl Reinhold, to Sandvik Aktiebolag. Composite body consisting of cemented carbide and cast alloy. 4,119,459, Cl. 75-243.000.

Eklund, Goran Sven: *See—*
Edwall, Nils Erik Gunnar; and Eklund, Goran Sven, 4,119,498, Cl. 204-1.00T.

Elders, Alvin J., to Whirlpool Corporation. Refuse compactor. 4,119,027, Cl. 100-215.000.

Elderton, Peter Platt, to International Telephone and Telegraph Corporation. Fluid sensitive shutdown for well pump. 4,119,865, Cl. 307-118.000.

Electric Power Research Institute, Inc.: *See—*
Rabinowitz, Mario, 4,119,793, Cl. 174-36.000.

Electric Terminal Corporation: *See—*
Blom, Rolland D., 4,119,214, Cl. 214-1.0BD.

Elek, Sandor: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.

Elekes, Istvan: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.

Elkins, Carlos D. Method and apparatus for handling liquid samples. 4,119,125, Cl. 141-11.000.

Ellis, Frank: *See—*
Sharp, Douglas Cecil William Thomas; and Ellis, Frank, 4,119,020, Cl. 99-339.000.

Ellis, Peter Manfrid; and Lester, Charles Martin, to Imperial Chemical Industries Limited. Method of reordering fibres in a web. 4,119,447, Cl. 156-73.100.

Eloranta, Vaito K.; and Ruggles, Benjamin C., Jr., to Polaroid Corporation. Variable density ophthalmic device. 4,119,369, Cl. 351-49.000.

El-Sayed, Aziz: *See—*
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.

Elsner, Emil A.; Ameling, Dieter Ch.; Assenmacher, Rolf; and Fuchs, Gerhard, to Korf-Stahl AG. Melting furnace. 4,119,792, Cl. 13-32.000.

Emelyanova, Valentina Mikhailovna: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mik-

hailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Emerson, Donald E., to Space-Age Control, Inc. Lever for motorcycle center stand. 4,119,327, Cl. 280-302.000.

Engelhard Minerals & Chemicals Corporation: *See*—
Rogers, William M., 4,119,706, Cl. 423-580.000.

Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, to Boehringer Ingelheim GmbH. Bronchospasmolytic 1-(p-amino-phenyl)-2-amino-ethanols-(1) and salts. 4,119,710, Cl. 424-282.000.

English Electric Valve Company Limited: *See*—
Wilcox, David Mark; and Corkhill, Robert Edward, 4,119,880, Cl. 313-348.000.

Enoue, Takasi. Additive to be admixed to cements. 4,119,597, Cl. 260-23.00R.

Enterprise Industrielle de Chaudronnerie: *See*—
Brola, Gabriel, 4,118,934, Cl. 60-647.000.

Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H.: *See*—
Tuson, Samuel, 4,119,145, Cl. 166-339.000.

Epple, Gerhard; Himmele, Walter; and Fliege, Werner, to BASF Aktiengesellschaft. Anthraquinonoid disperse dyes. 4,119,644, Cl. 260-345.90R.

Ernie Samuels, Inc.: *See*—
Samuels, Ernest K., 4,119,123, Cl. 138-122.000.

Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, to SKF Industrial Trading & Development Company B.V. Clutch release device. 4,119,187, Cl. 192-98.000.

Erwin, Ransome W., to Austral-Erwin Engineering Company. Heat exchangers and evaporators. 4,119,485, Cl. 159-28.00B.

Esquire, Inc.: *See*—
McReynolds, Glen Harold, Jr., 4,120,023, Cl. 362-16.000.

Essilor International: *See*—
Godot, Jean Marie, 4,118,898, Cl. 51-216.0LP.

Essilor International, Cie Generale d'Optique: *See*—
Mignen, Bernard, 4,118,853, Cl. 29-424.000.

Estes, Bay E., III; and Nedbal, Richard A., to Alliance Manufacturing Company, Inc., The. Sequencing control circuit. 4,119,896, Cl. 318-266.000.

Ettel, Victor Alexander; and Babjak, Juraj, to International Nickel Company, Inc., The. Three phase separation. 4,119,539, Cl. 210-73.00R.

Evans, James M.: *See*—
Woo, James T. K.; and Evans, James M., 4,119,599, Cl. 260-29.40R.

Evers, William J.; and Heinsohn, Howard H., Jr., to International Flavors & Fragrances Inc. α-Oxy(oxo) sulfides and ethers. 4,119,788, Cl. 560-152.000.

Everswick, David N., to United States of America, Army. Projectile in-bore memory system. 4,119,913, Cl. 325-113.000.

Ewig, John F., Jr., to Parker Manufacturing Company. Plastic staple gun. 4,119,258, Cl. 227-132.000.

Extracorporeal Medical Systems, Inc.: *See*—
Meginniss, Stephen Mason, III, 4,119,113, Cl. 137-99.000.

Exxon Production Research Company: *See*—
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.

Exxon Research & Engineering Co.: *See*—
Baird, William C., Jr.; and Bearden, Roby, Jr., 4,119,528, Cl. 208-108.000.
Hulme, Roger, 4,119,655, Cl. 260-440.000.
Maas, Edward T., Jr.; and Longo, John M., 4,119,559, Cl. 252-301.10R.
O'Farrell, Charles P.; and Serniuk, George E., 4,119,616, Cl. 526-31.000.

Fabiero nee Posadas, Carolina P.: *See*—
Crouch, William B.; Fabiero nee Posadas, Carolina P.; and Robin, Allen M., 4,119,566, Cl. 252-372.000.

Facet Enterprises, Inc.: *See*—
Mower, Michael Lee; Carleton, William Arthur; and Packard, Gary Richard, 4,119,184, Cl. 192-82.00T.

Fafco Incorporated: *See*—
Steed, Michael Halsey, 4,119,334, Cl. 285-236.000.

Fagnoni, Yves: *See*—
Bonnaud, Bernard; and Fagnoni, Yves, 4,119,601, Cl. 260-29.60R.

Falk Corporation, The: *See*—
Phinney, John M., 4,119,185, Cl. 192-.094.

Farber, Sheldon, to NCR Corporation. Vinyl phthalide color formers. 4,119,776, Cl. 542-441.000.

Farid, Samir Yacoub: *See*—
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, 4,119,466, Cl. 96-115.00R.

Fazi, Marco: *See*—
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, 4,118,947, Cl. 62-514.00R.

Fedor, Robert J.; and Ogden, Cameron S., to Gould Inc. NO_x reduction catalyst for internal combustion engine emission control. 4,119,701, Cl. 423-213.200.

Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, to Clairol Incorporated. Composition for coloring hair containing an oxidizing agent and certain quaternary amines. 4,119,399, Cl. 8-10.200.

Felch, Donald E.: *See*—
Peters, Kenneth D.; Veinerman, Elliot; and Felch, Donald E., 4,119,526, Cl. 208-64.000.

Felker, Charles E.: *See*—
Rieffle, Paul F.; and Felker, Charles E., 4,119,335, Cl. 285-337.000.

Fell, Charles M.: *See*—
Boe, Thomas Jerald; Fell, Charles M.; and Jenkins, William Leon, 4,119,023, Cl. 100-2.000.

Fengels, Gerd, to Bruggemann & Brand KG. Fastening hook. 4,118,840, Cl. 24-239.000.

Fergin, Richard L.: *See*—
Neuzil, Richard W.; and Fergin, Richard L., 4,119,678, Cl. 260-677.00A.

Fewster, Sidney: *See*—
Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, 4,119,772, Cl. 429-204.000.

Fialkov, Abram Samoilovich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Fichtel & Sachs AG: *See*—
Steuer, Werner, 4,119,182, Cl. 192-6.00A.

Fidelity Container Corporation: *See*—
Dlugopolski, Joseph, 4,119,265, Cl. 229-31.00R.

Fiechter, Richard E. Vehicle mounted conveyor. 4,119,223, Cl. 214-83.260.

Fiege, Helmut: *See*—
Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, 4,119,671, Cl. 260-600.00R.

Field, Frederick C., Jr.: *See*—
Adams, Dustin Stetson; Field, Frederick C., Jr.; and Layton, James Ronald, 4,118,921, Cl. 57-140.00R.

Fieldcrest Mills, Inc.: *See*—
Puckett, Sandres Alfred, 4,119,049, Cl. 112-266.000.

Filip, Stanislaw Franz; and Miutel, Alexander, to KLF Inventions and Patent Development and Marketing Corporation Ltd. Foamed articles and methods for making same. 4,119,583, Cl. 521-103.000.

Finck, Johan Christiaan Jacobus: *See*—
Uden, Edward; Schreihage, Wilhelm; and Finck, Johan Christiaan Jacobus, 4,120,020, Cl. 361-386.000.

Fine, David H.; Ross, Ronald D., Jr.; and Rounbehler, David P., to Thermo Electron Corporation. Method to measure in vivo N-nitroso compounds. 4,119,402, Cl. 23-230.00B.

Finkelstein, H. Method for slime control. 4,119,537, Cl. 210-64.000.

Fischer, Erhardt; and Richmond, Michael Hugh, to Polysar Limited. Powdered rubber. 4,119,759, Cl. 428-407.000.

Fischer, Janos. Electronic digital watch combined with a computer. 4,120,039, Cl. 364-705.000.

Fischer, Rolf: *See*—
Weitz, Hans-Martin; Fischer, Rolf; and Broecker, Franz Josef, 4,119,665, Cl. 260-561.00A.

Fischer, Udo Karl Reinhold: *See*—
Ekemar, Sven Karl Gustav; and Fischer, Udo Karl Reinhold, 4,119,459, Cl. 75-243.000.

Fisher, Gordon Lloyd; and Huston, Ernest Lee, to International Nickel Company, Inc., The. Electroplating nickel using anodes of flattened nickel forms. 4,119,501, Cl. 204-49.000.

Fishwick, Brian Ribbons: *See*—
Boyd, Violet; Fishwick, Brian Ribbons; and Watson, David John, 4,119,624, Cl. 260-207.100.

Fisk, Bernard C.; and VerSchage, Gerald C., to Xerox Corporation. Programmable controller for controlling reproduction machines. 4,120,034, Cl. 364-518.000.

Fitzgerald, Robert T.: *See*—
Wilkins, Paul E.; Neville, Glenn E.; and Fitzgerald, Robert T., 4,119,039, Cl. 102-214.000.

Fives-Cail Babcock: *See*—
Durinck, Rene, 4,119,692, Cl. 264-71.000.

Flaherty, Kenneth A., to Brown & Williamson Tobacco Corporation. Collapsible package. 4,119,196, Cl. 206-271.000.

Flemming, John Peter Wilfred, to Western Electric Company, Inc. Monitoring the location of a robot hand. 4,119,212, Cl. 214-1.0CM.

Fletchic, Donald K.: *See*—
Morrison, Howard J.; Fletchic, Donald K.; and Baer, Ralph H., 4,119,844, Cl. 250-231.00R.

Fliege, Werner: *See*—
Epple, Gerhard; Himmele, Walter; and Fliege, Werner, 4,119,644, Cl. 260-345.90R.

Flory, Robert Earl: *See*—
Abbott, Liston; Beakley, Guy Ward; and Flory, Robert Earl, 4,120,001, Cl. 358-11.000.

Floyd, Roger M.: *See*—
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,119,263, Cl. 229-17.00B.

Foellner, Donald M. Display system for watches and the like. 4,118,924, Cl. 58-127.00R.

Fogelberg, Mark John, to Borg-Warner Corporation. Automatic four-wheel drive transfer case. 4,119,168, Cl. 180-49.000.

Fogg, Robert K., Jr.; and Staehli, Christopher P., to United States of America, Navy. Stand-aid invalid wheelchair. 4,119,164, Cl. 180-6.500.

Ford Motor Company: *See—*
Stickels, Charles A., 4,119,444, Cl. 148-16.600.
Yen, Chia-Ming; and Schmatz, Duane J., 4,119,262, Cl. 228-206.000.

Forss, Bertil: *See—*
Hafner, Emanuel; and Forss, Bertil, 4,119,804, Cl. 179-15.0AL.

Foster, T. Kenneth: *See—*
Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., 4,119,022, Cl. 99-532.000.

Fotiu, Eustace: *See—*
Goldner, Tibor G.; and Fotiu, Eustace, 4,119,712, Cl. 424-63.000.

Fowle, Norman F.; Madden, William M.; and Marshall, James F., to United Technologies Corporation. Flow diverter. 4,119,274, Cl. 239-265.290.

Fox, Edward Coley, to RCA Corporation. Signal defect detection and compensation with signal de-emphasis. 4,119,812, Cl. 179-100.40D.

Foxboro Company, The: *See—*
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., 4,118,977, Cl. 73-141.00R.

Fraioli, Anthony V.: *See—*
Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., 4,119,513, Cl. 204-195.00S.

Frank, Lee Fitzpatrick; and Lee, James Kelly, to Eastman Kodak Company. Timed piezoelectric shutter control for cameras. 4,119,979, Cl. 354-50.000.

Frank, Richard: *See—*
Kotschak, Otto; and Frank, Richard, 4,119,234, Cl. 220-2.10R.

Franke, Kurt, to Siemens Aktiengesellschaft. X-ray diagnostic apparatus for producing series exposures. 4,119,856, Cl. 250-402.000.

Frankfort, Eric J.; and Terrett, David Stuart, to American District Telegraph Company. Central station system including secondary communication path established through commercial telephone network. 4,119,815, Cl. 179-175.30S.

Franklin Enterprises, Inc.: *See—*
Lohning, Franklin M., 4,120,051, Cl. 366-142.000.

Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., to Greene Line Manufacturing Corp. Sheet feeding apparatus. 4,119,220, Cl. 214-8.50A.

Freeman, Gerald C.; and Mahoney, James F., to Pitney-Bowes, Inc. System and apparatus for the orientation and bidirectional feed of indicia bearing mail. 4,119,194, Cl. 198-400.000.

Freese, Courtland F. H., to Globe Manufacturing Company. Suspender ends. 4,118,804, Cl. 2-340.000.

Freiberg, James M. Putter cover. 4,119,129, Cl. 150-52.00G.

French Oil Mill Machinery Company, The: *See—*
Craig, Gregory C.; and Eckstein, William B., 4,120,050, Cl. 366-75.000.

Fresnel, Jacques, to Sleever. Thermoplastic wrapping machine. 4,118,916, Cl. 53-292.000.

Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and by Gluskin, Boris Abramovich, administrator. Carbon-graphite material for brushes of electric machines and method for preparing same. 4,119,572, Cl. 252-506.000.

Frishman, Leslie O.; and Nelson, Kerry S., to Minnesota Mining and Manufacturing Company. Electrographic apparatus and method for using arsenic selenide as the photoconductor. 4,119,373, Cl. 355-3.00R.

Froehlig, Rudolph A., to Modern Album and Finishing Co., Inc. Phonograph record album or similar item. 4,119,198, Cl. 206-312.000.

Froelich, Mark Stayton. Method for treating well bores and apparatus therefor. 4,119,150, Cl. 166-276.000.

Frye, Guenter, to Rheinmetall GmbH. Double-feed sprocket arrangement for munition changing. 4,119,012, Cl. 89-33.0SF.

Fuchs, Gerhard: *See—*
Eisner, Emil A.; Ameling, Dieter Ch.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,119,792, Cl. 13-32.000.

Fugol, Valery Alexeevich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Fuhrman, James L., to Rockwell International Corporation. Memory with simultaneous sequential and random address modes. 4,120,048, Cl. 365-239.000.

Fuji Electric Co., Ltd.: *See—*
Miyoshi, Noriomi; and Tsuruoka, Michihiko, 4,118,993, Cl. 74-37.000.

Fuji Photo Film Co., Ltd.: *See—*
Kondo, Toshihiro, 4,119,978, Cl. 354-38.000.
Oishi, Kengo, 4,119,282, Cl. 242-199.000.
Takahashi, Yutaka; Hakamata, Yoshio; and Konno, Masamitu, 4,119,952, Cl. 340-309.100.
Usui, Hideo; Ishige, Sadao; and Saeki, Keiso, 4,119,777, Cl. 544-6.000.

Fujii, Hideo: *See—*
Nishi, Yusaku; and Fujii, Hideo, 4,119,480, Cl. 156-272.000.

Fujii, Toshihiko, to Nissan Motor Company, Ltd. Method of press-forming corrugated paperboard as substrate of curved trim board. 4,119,451, Cl. 156-211.000.

Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, to Kubata Ltd. Clutch. 4,119,183, Cl. 192-24.000.

Fujishima, Minoru: *See—*
Nishizawa, Hiroshi; Tanaka, Shigeyoshi; and Fujishima, Minoru, 4,119,679, Cl. 260-835.000.

Fujitsu Limited: *See—*
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.

Fujiwara, Shinobu, to TDK Electronics Co., Ltd. Ceramic dielectric composition containing alkali metal oxide. 4,119,554, Cl. 252-63.200.

Fujiwara, Yasuo: *See—*
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,119,492, Cl. 195-28.0VB.

Fulkerson, David E., to Honeywell Inc. DOT-AND logic gate device including multiemitter transistor. 4,119,997, Cl. 357-36.000.

Fuller, Robert T.; and Sanders, Robert J. Means for displaying articles in shingled relationship. 4,119,207, Cl. 211-45.000.

Funahashi, Takaji. Endless printing belt for rotary rubber stamp. 4,119,030, Cl. 101-111.000.

Funayama, Toshio: *See—*
Hoshi, Hirohiko; Funayama, Toshio; Ishiguro, Kazuhiko; and Umehara, Hidetomo, 4,119,061, Cl. 123-3.000.

Funke, Peter, to Gebruder Funke. Unitary mounted air-pressure pump and liquid outlet. 4,119,244, Cl. 222-400.800.

Furuta, Kazuhisa, to Bridgestone Liquefied Gas Co. Ltd. Cryogenic liquefied gas tank of the membrane type. 4,119,241, Cl. 220-439.000.

Fusco, Robert A., to General Electric Company. Lubricated mandrel for a finning machine. 4,118,964, Cl. 72-43.000.

Futamase, Tsuyoshi: *See—*
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.

Futters (London) Limited: *See—*
Jackson, Ewart William, 4,118,966, Cl. 72-114.000.

G. D. Searle & Co.: *See—*
Ray, Richard E., 4,119,638, Cl. 260-326.12A.

G. Rau: *See—*
Stoeckel, Dieter, 4,119,260, Cl. 228-111.000.

Gadaev, Anatoly Yokovlevich: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.

Gaertner, Van R.; and Hamm, Philip C., to Monsanto Company. N-(2-hydroxyalkyl) derivatives of N-phosphonomethylglycine and herbicidal compositions containing same. 4,119,430, Cl. 71-86.000.

GAF Corporation: *See—*
Hort, Eugene V., 4,119,790, Cl. 568-855.000.
Schneider, Louis; and Graham, David E., 4,119,725, Cl. 424-274.000.

Gagliano, Stephen J.: *See—*
Pinzone, Joseph A.; Pinzone, Anthony J.; and Gagliano, Stephen J., 4,119,107, Cl. 132-79.00G.

Gakken Co., Ltd. Kabushiki Kaisha Gakushu Kenkyusha: *See—*
Noguchi, Ichiro; Hayashi, Chiaki; and Muroga, Hisashi, 4,119,875, Cl. 310-248.000.

Galanti, Joseph Anthony: *See—*
Howland, Robert Franklin; Jasovsky, George Anthony; and Galanti, Joseph Anthony, 4,119,736, Cl. 426-386.000.

Gallo, Luigi C., to Ampex Corporation. Apparatus for inserting a digital sync word, phase-synchronized to the color subcarrier, in place of the horizontal sync signal. 4,119,999, Cl. 358-4.000.

Gancarz, Robert Martin, Sr. Method of recovering tin from tin dross. 4,119,136, Cl. 164-121.000.

Garlock Inc: *See—*
Bainard, Dean R.; and Denton, Dennis N., 4,118,856, Cl. 29-511.000.

Garlock Inc.: *See—*
Denton, Dennis N.; and Boyd, David G., 4,119,324, Cl. 277-134.000.

Garon, Gilles; and Henault, Andre. Microwave intrusion sensing units and antenna therefor. 4,119,951, Cl. 340-552.000.

Gaughan, Edmund J., to Stauffer Chemical Company. Herbicidal N-(dialkylcarbamyl)-N-trifluoromethyl-phenylcarbamyl alkyl disulfides. 4,119,432, Cl. 71-98.000.

Gaughan, John C.: *See—*
Membrino, Robert J.; and Gaughan, John C., 4,120,028, Cl. 364-200.000.

Gaylord, Richard S.: *See—*
Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., 4,118,909, Cl. 52-196.000.

Geary, David F.: *See*—
Lord, Richard G.; Bussjager, Rudy C.; and Geary, David F., 4,118,944, Cl. 62-98.000.
Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H.: *See*—
Sander, Rolf; and Oberste-Beulmann, Klaus, 4,119,350, Cl. 299-87.000.
Gebruder Funke: *See*—
Funke, Peter, 4,119,244, Cl. 222-400.800.
Gebruder Welger: *See*—
Sacht, Hans Otto, 4,119,026, Cl. 100-89.000.
Gee, Ted F., to General Motors Corporation. Radially removable turbine vanes. 4,119,389, Cl. 415-189.000.
General Battery Corporation: *See*—
Eberle, William J., 4,119,137, Cl. 164-332.000.
General Cable Corporation: *See*—
Small, Robert F.; and Meredith, Joel B., 4,118,907, Cl. 52-115.000.
General Electric Company: *See*—
Arendt, Ronald H.; Huseby, Irvin C.; and Borom, Marcus P., 4,119,437, Cl. 134-3.000.
Dakin, James T.; and Darrow, Kenneth A., 4,119,390, Cl. 416-96.00R.
Devine, Thomas M., Jr., 4,119,261, Cl. 228-113.000.
Devine, Thomas M., Jr., 4,119,879, Cl. 313-330.000.
Fusco, Robert A., 4,118,964, Cl. 72-43.000.
Holub, Fred Frank; and Wilson, Phillip Steven, 4,119,603, Cl. 260-32.60R.
Leclair, Robert A., 4,118,936, Cl. 60-720.000.
Matson, Stephen L., 4,119,408, Cl. 422-169.000.
Moore, Warren F., 4,119,458, Cl. 75-170.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,475, Cl. 106-73.500.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,689, Cl. 264-65.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,690, Cl. 264-65.000.
Shelley, Peter Stephen; Love, William Darrell; and Stone, Barry Newell, 4,119,853, Cl. 250-385.000.
Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., 4,119,358, Cl. 339-111.000.
General Engineering & Applied Research, Inc.: *See*—
Lieber, Albert J., 4,120,002, Cl. 358-111.000.
General Foods Corporation: *See*—
Howland, Robert Franklin; Jasovsky, George Anthony; and Galanti, Joseph Anthony, 4,119,736, Cl. 426-386.000.
General Instrument Corporation: *See*—
Atkin, Michael Frank, 4,119,808, Cl. 179-84.0VF.
General Motors Corporation: *See*—
Aldrich, William L.; and Sawruk, John M., 4,119,067, Cl. 123-52.0MB.
Ayotte, Richard F.; and Jones, Trevor O., 4,119,166, Cl. 180-14.00R.
Gee, Ted F., 4,119,389, Cl. 415-189.000.
Hayden, Daniel B.; Smith, George W.; and Kaplit, Michael, 4,119,842, Cl. 250-201.000.
Hegedus, Louis; and Summers, Jack C., 4,119,571, Cl. 252-466.0PT.
Hile, John W., 4,119,440, Cl. 148-1.500.
Iobst, Stanley A.; and Cox, Howard W., 4,119,594, Cl. 260-18.0TN.
Klomp, Edward D., 4,119,064, Cl. 123-30.00C.
Lenox, Clayton R., 4,119,827, Cl. 219-98.000.
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich. High voltage electrical network with DC ice-melting device and current return through ground. 4,119,866, Cl. 307-147.000.
Genuit, Luther L. Electronic score-keeper for table tennis. 4,119,838, Cl. 235-92.0GA.
George, Lyndell J. C.; and Shelly, Robert S., to AGL Corporation. Self-leveling construction alignment laser. 4,119,382, Cl. 356-249.000.
Georgi, Hans: *See*—
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.
Gerber Products Company: *See*—
Maher, Robert H.; and Kraley, Lee E., 4,119,735, Cl. 426-264.000.
Gergen, William P.; and Davison, Sol, to Shell Oil Company. Multicomponent polyester- block copolymer- polymer blends. 4,119,607, Cl. 260-40.00R.
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich. Electrode structure for an electric discharge device. 4,119,876, Cl. 313-231.400.
Gershenovich, Abram Iosifovich: *See*—
Balakirev, Efim Stepanovich; Bogomolova, Galina Ilinichna; Gershenovich, Abram Iosifovich; and Gruzdeva, Irina Viktorovna, 4,119,661, Cl. 260-513.00R.
Gertsik, Efim Mikhailovich: *See*—
Nabiullin, Faat Khatovich; Gertsik, Efim Mikhailovich; Rodionov, Jury Timofeevich; and Rabinovich, Vyacheslav Anatolievich, 4,119,126, Cl. 141-100.000.
Gesellschaft fur Kernforschung m.b.H.: *See*—
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, 4,119,561, Cl. 252-301.10W.
Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen mbH: *See*—
Zeh, Horst, 4,118,987, Cl. 73-422.00R.
Gewerkschaft Eisenhutte Westfalia: *See*—
Merten, Gerhard; and Schlusener, Horst, 4,119,347, Cl. 299-34.000.
Unger, Eberhard; and Von Schenk, Wolf-Rudiger, 4,118,938, Cl. 405-145.000.
Giddings, Robert A.: *See*—
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,475, Cl. 106-73.500.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,689, Cl. 264-65.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,690, Cl. 264-65.000.
Gies, Jakob. Stand for releasably locking a pole-like member in upright position. 4,119,290, Cl. 248-523.000.
Gifford, Bruce M.: *See*—
Owen, A. B.; Gifford, Bruce M.; Bahl, Horst H.; and Akins, Lewis F., 4,118,850, Cl. 29-243.520.
Gil, Jose-Luis. Methods of reduction of bone fractures. 4,119,092, Cl. 128-92.00D.
Gill, R. A.: *See*—
Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., 4,119,600, Cl. 260-29.6RW.
Gilliland, Malcolm T. Remote welding control system. 4,119,830, Cl. 219-132.000.
Girardi, Frank D., to Port-A-Phone, Inc. Radio-telephone interconnection system. 4,119,800, Cl. 179-2.0EA.
Gisbourne, Bryan James, to Scapa-Porritt Limited. Papermakers fabrics. 4,119,754, Cl. 428-255.000.
Gitter, John E. Louvered window cleaner. 4,118,822, Cl. 15-121.000.
Glasrock Products, Inc.: *See*—
Midorikawa, Yoshio, 4,119,756, Cl. 428-295.000.
Globe Manufacturing Company: *See*—
Freese, Courtland F. H., 4,118,804, Cl. 2-340.000.
Glover, Clyde Pershing: *See*—
Muka, Edward; and Glover, Clyde Pershing, 4,119,381, Cl. 356-244.000.
Gluskin, Abram Yakovlevich, deceased: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Gluskin, Boris Abramovich, administrator: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Gocho, Choichi, to Tokyo Shibaura Electric Company, Ltd. Starting apparatus for gas turbine-generator mounted on electric motor driven motorcar. 4,119,861, Cl. 290-13.000.
Gocho, Choichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Control apparatus of electric motor cars. 4,119,862, Cl. 290-17.000.
Gocht, Ronald: *See*—
Thaler, Michael; and Gocht, Ronald, 4,120,049, Cl. 365-230.000.
Godot, Jean Marie, to Essilor International. Mounting block for mounting a lens in a lens trimming and bevelling machine. 4,118,898, Cl. 51-216.0LP.
Goeppner, Ronald R.; Kuehne, William M.; and Russell, Timothy D., to Container Corporation of America. Apparatus for detecting leaks in composite packages. 4,118,972, Cl. 73-40.000.
Goharel, Maurice: *See*—
Auroy, Michel; Goharel, Maurice; and Zoulalian, Jacques, 4,119,645, Cl. 260-346.400.
Goldfarb, Adolph E.; and Benkoe, Erwin. Competitive action playing game with erratically movable playing piece. 4,119,315, Cl. 273-85.00F.
Goldfarb, Adolph E.; and Benkoe, Erwin. Electrical board game apparatus. 4,119,319, Cl. 273-237.000.
Goldfischer, Lester I., to Singer Company, The. Microwave correlator. 4,119,968, Cl. 343-100.0ME.
Goldmann, Gerd, to Siemens Aktiengesellschaft. Ionographic recording of X-ray images. 4,119,848, Cl. 250-315.00A.
Goldner, Tibor G.; and Fotiu, Eustace, to Revlon, Inc. Makeup foundations. 4,119,712, Cl. 424-63.000.
Goldschmidt, Rolf; Hansgen, Klaus; and Hiersig, Heinz M., to Mannesmann Aktiengesellschaft. Method of making gear and shaft or hub assemblies. 4,118,848, Cl. 29-159.200.
Goldstein, Robert H.; and Stahl, Robert M., to Bio-Dynamics, Inc. Cuvette with reagent release means. 4,119,407, Cl. 422-58.000.
Golner, Jerold Julius; Miller, William Joseph; and Strout, Russell Brown, to Borden, Inc. Container for dispensing film. 4,119,251, Cl. 225-20.000.
Gonda, Tsunemi, to Nippon Kogaku K.K. Constant high voltage generating circuit. 4,119,906, Cl. 323-22.00T.
Goodman, Floyd G. Integral patient-limb surgical drape system. 4,119,093, Cl. 128-132.00D.

Goodyear Tire & Rubber Company, The: *See—*
Hollingshead, William Shepherd; and Nowak, Edward Norbert, 4,119,791, Cl. 568-768.000.

Gooley, Cornelius Leonard. Fluid measurement. 4,119,860, Cl. 250-577.000.

Gordon, Eric M., to E. R. Squibb & Sons, Inc. Thiooxime cephalosporin derivatives. 4,119,778, Cl. 544-26.000.

Gordon, Sidney; Wilkins, John Thomas; and Mayo, Haydn Frank, to R. G. Dixon & Company Limited. Floor treating machines. 4,118,819, Cl. 15-49.00R.

Gorelin, Evgeny Vasilievich: *See—*
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.

Gormley, Edward J.: *See—*
McSherry, Thomas; and Gormley, Edward J., 4,118,910, Cl. 52-699.000.

Gorsky, Peter, to Raymond Lee Organization, Inc., The, a part interest. Fish bite indicator. 4,118,882, Cl. 43-17.000.

Goto, Nobuo: *See—*
Tanaka, Kazumitsu; and Goto, Nobuo, 4,119,854, Cl. 250-397.000.

Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, to E. MERCK, Patentabteilung. Penicillins and their preparation. 4,119,631, Cl. 260-295.00A.

Goudey, Clifford, to Massachusetts Institute of Technology. Bollard-hanger and coupler system. 4,119,300, Cl. 254-192.000.

Gould, Edson B., III: *See—*
Kincheloe, Dan D.; Gregory, Elmo M.; Todd, Carl David; and Gould, Edson B., III, 4,120,031, Cl. 364-464.000.

Gould Inc.: *See—*
Fedor, Robert J.: and Ogden, Cameron S., 4,119,701, Cl. 423-213.200.
Scapes, John N., 4,119,296, Cl. 251-210.000.

Gould, Russell J.; and Adams, Karl G., to Signode Corporation. Strapping joint and method and apparatus for forming same. 4,119,449, Cl. 156-73.500.

Governale, Bernard C., to Peachtree Doors, Inc. Liner for intersecting cross bore and edge bore of foam-filled metal skinned door. 4,118,895, Cl. 49-503.000.

Grable, Ronald C., to W. R. Grace & Co. Distributor spring for use in a magnetic sensor. 4,119,075, Cl. 123-146.50A.

Graham, Craig W., Jr.: *See—*
Moore, Donald K.; Beaman, George R.; Hightower, John D.; and Graham, Craig W., Jr., 4,119,941, Cl. 340-5.00R.

Graham, David E.: *See—*
Schneider, Louis; and Graham, David E., 4,119,725, Cl. 424-274.000.

Gralnik, Sidney. Two piece finger ring. 4,118,948, Cl. 63-15.000.

Granges Essem Aktiebolag: *See—*
Paitula, Hannu Olli; and Larsson, Roland Axel, 4,119,281, Cl. 242-107.000.

Gray, George William: *See—*
Coates, David; and Gray, George William, 4,119,558, Cl. 252-299.000.

Gray, Michael David; and Kimber, Geoffrey Michael, to Coal Industry (Patents) Limited. Manufacture of coke. 4,119,525, Cl. 208-8.000.

Great Plains Bag Corp.: *See—*
Segura, Daniel A., 4,119,268, Cl. 229-54.00R.

Greenaway, David Leslie, to Landis & Gyr. Multilayer identification card. 4,119,361, Cl. 350-1.100.

Greene, Jack C., to United States of America, Navy. Pulsed repeater amplifier. 4,119,920, Cl. 330-43.000.

Greene, Jerrold W.: *See—*
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,119,220, Cl. 214-8.50A.

Greene Line Manufacturing Corp.: *See—*
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,119,220, Cl. 214-8.50A.

Greenwald, Harry; and Lier, Pierre, to Walter Kidde & Company, Inc. Access door locking mechanism for a coin operated apparatus. 4,119,237, Cl. 220-210.000.

Gregory, Elmo M.: *See—*
Kincheloe, Dan D.; Gregory, Elmo M.; Todd, Carl David; and Gould, Edson B., III, 4,120,031, Cl. 364-464.000.

Greskovich, Charles D.: *See—*
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,475, Cl. 106-73.500.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,689, Cl. 264-65.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,119,690, Cl. 264-65.000.

Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, to U.S. Philips Corporation. Electric lamp having a cap plate. 4,119,877, Cl. 313-318.000.

Grier, Nathaniel; and Witzel, Bruce E., to Merck & Co., Inc. 1,3,5-s-Hexahydrotrisubstituted triazines. 4,119,779, Cl. 544-215.000.

Griffin, Robert M.: *See—*
Audesse, Emery G.; Griffin, Robert M.; and Oberlin, Max E., 4,119,832, Cl. 219-270.000.

Grishin, Boris Vasilievich. Method of producing gas developing agent for cellular concretes. 4,119,476, Cl. 106-87.000.

Grohoski, Edward Gregory, to Hartford Special Machinery Company, The. Die mounting assembly for a planetary work forming machine. 4,118,965, Cl. 72-102.000.

Gronner, Alfred Douglas: *See—*
Simon, David Julian; Gronner, Alfred Douglas; and Stella, Carl Cono, 4,119,958, Cl. 340-347.0SY.

Groom, James S., to Package Machinery Company. Apparatus for mixing and dispensing fast setting plastic material into a mold. 4,119,304, Cl. 366-189.000.

Grossbard, Henry. Brilliantized step cut stone. 4,118,949, Cl. 63-32.000.

Grossbard, Henry. Brilliantized step cut stone with faceted crown. 4,118,950, Cl. 63-32.000.

Groupement pour les Activites Atomiques et Avancees: *See—*
Carbonnel, Henri; and Chaminade, Francois, 4,119,469, Cl. 106-40.00R.

Grouwinkel, G. Franklin: *See—*
Jacobson, Michael D.; and Grouwinkel, G. Franklin, 4,118,930, Cl. 60-266.000.

Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., to Philip Morris, Incorporated. Flavorant-release resin compositions. 4,119,106, Cl. 131-17.00R.

Grumman Aerospace Corporation: *See—*
Knowles, Gregory W.; Sangesland, Odd E.; Vroom, Henry J.; and Madey, Robert W., 4,119,085, Cl. 126-271.000.

Grund, Norbert: *See—*
Hansen, Guenter; Kaack, Hermann; and Grund, Norbert, 4,119,621, Cl. 260-158.000.

Grunewald, Paul: *See—*
Seitz, Charles Lewis; and Grunewald, Paul, 4,119,954, Cl. 340-324.0AD.

Gruppo Lepetit S.p.A.: *See—*
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.

Gruzdeva, Irina Viktorovna: *See—*
Balakirev, Efim Stepanovich; Bogomolova, Galina Ilinichna; Gershenovich, Abram Iosifovich; and Gruzdeva, Irina Viktorovna, 4,119,661, Cl. 260-513.00R.

GTE Sylvania Incorporated: *See—*
Audesse, Emery G.; Griffin, Robert M.; and Oberlin, Max E., 4,119,832, Cl. 219-270.000.
Newell, P. Bruce; and Morris, James C., 4,119,888, Cl. 315-205.000.

Guenon, Jean-Pierre; and Verdenne, Serge J. C., to Sperry Rand Corporation. Hillside bale wagon. 4,119,218, Cl. 214-6.00B.

Gulf Oil Corporation: *See—*
Albulescu, Peter; and McMahon, Joseph F., 4,119,349, Cl. 299-2.000.

Gunther, Albert W. Snubbing apparatus. 4,119,297, Cl. 254-29.00R.

Gusev, Andrei Nikolaevich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Gutman, Arnold D., to Stauffer Chemical Company. Certain diaryldithiophosphorodiamidates and their use as biocides. 4,119,716, Cl. 424-220.000.

Gutman, David P.: *See—*
Addy, Tralance O.; and Gutman, David P., 4,118,832, Cl. 19-304.000.

Gutos Metallschliessenfabrik Bader & Hoch KG: *See—*
Hoch, Fritz, 4,118,837, Cl. 24-75.000.

Guzowski, Kenneth A.: *See—*
Blumenberg, Horst H.; and Guzowski, Kenneth A., 4,119,884, Cl. 313-417.000.

H & S Industries, Inc.: *See—*
Hobson, John A.; and Schilling, Paul K., 4,119,757, Cl. 428-311.000.

Haas, Ernst; Platzoeder, Karl; and Schnoeller, Manfred, to Siemens Aktiengesellschaft. Method for the production of n-doped silicon with a dish-shaped profile of specific resistance in a radial direction. 4,119,441, Cl. 148-1.500.

Haas, Hans: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.

Hackstein, Karl-Gerhard: *See—*
Kadner, Martin; Hackstein, Karl-Gerhard; and Spener, Gerhard, 4,119,563, Cl. 252-301.10S.

Hafner, Emanuel; and Forss, Bertil, to Hasler AG. Open loop system for transmitting digital information. 4,119,804, Cl. 179-15.0AL.

Hafner, Hermann; and Steiper, Otto, to Martin Wendel KG. Automatic, continuously operable bag opening apparatus. 4,119,227, Cl. 214-305.000.

Hagelueken, Hubert P.: *See—*
Walther, Carl Kurt; Walther, Henning D.; Hagelueken, Hubert P.; and Temme, Karl, 4,118,896, Cl. 51-163.200.

Haggar Company: *See—*
Off, Joseph W. A.; and Early, Judson Horace, 4,119,246, Cl. 223-52.000.

Haglund, Stephen A., to Honeywell Inc. Low battery voltage detector. 4,119,904, Cl. 320-48.000.

Hakamata, Yoshio: *See*—
Takahashi, Yutaka; Hakamata, Yoshio; and Konno, Masamitu, 4,119,952, Cl. 340-309.100.

Haker, Gerd. Mould for making and holding a working model of a jaw impression for the manufacture of dental prostheses. 4,119,292, Cl. 249-54.000.

Hall, Albert Mangold: *See*—
Roach, Donald Brian; Van Echo, John Andrew; and Hall, Albert Mangold, 4,119,456, Cl. 75-122.000.

Hall, Charles M.; and Wright, John B., to Upjohn Company, The. 3'Lower alkylcarbonyl oxanilic acid esters. 4,119,783, Cl. 560-43.000.

Hall, David B.: *See*—
Shackleford, William L.; Winter, Donald C.; and Hall, David B., 4,119,929, Cl. 331-94.50M.

Hall, John B.: *See*—
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.

Hall, Wilbur L.: *See*—
Wu, Ching H.; Brown, Alfred; and Hall, Wilbur L., 4,119,149, Cl. 166-266.000.

Haller, Jack R., to J. R. Haller, Ltd. Inc. Electrostatic coating-dispensing apparatus. 4,120,015, Cl. 361-227.000.

Hamaker, Ralph A., to Xerox Corporation. Sheet stripping apparatus. 4,119,307, Cl. 271-174.000.

Hamaker, Ralph A., to Xerox Corporation. Sheet stripping apparatus. 4,119,308, Cl. 271-174.000.

Hamamura, Tadashi: *See*—
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.

Hamm, Philip C.: *See*—
Gaertner, Van R.; and Hamm, Philip C., 4,119,430, Cl. 71-86.000.

Hammann, Ingeborg: *See*—
Hoffmann, Hellmut; Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,119,715, Cl. 424-216.000.

Hansen, Franklin A.: *See*—
Shaw, Kenneth R.; and Hansen, Franklin A., 4,119,236, Cl. 220-89.00A.

Hansen, Guenter; Kaack, Hermann; and Grund, Norbert, to BASF Aktiengesellschaft. Azo dyes having a benzoisothiazolyl diazo component. 4,119,621, Cl. 260-158.000.

Hansgen, Klaus: *See*—
Goldschmidt, Rolf; Hansgen, Klaus; and Hiersig, Heinz M., 4,118,848, Cl. 29-159.200.

Hanson, Horacio Lou. Article carrier. 4,119,249, Cl. 224-26.00R.

Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, to Showa Highpolymer Co., Ltd. Curable resinous composition comprising an unsaturated cycloacetal compound and a polythiol compound. 4,119,617, Cl. 528-360.000.

Happel, Robert, to Daimler-Benz Aktiengesellschaft. Internal combustion engine. 4,119,066, Cl. 123-32.0SP.

Hara, Haruo: *See*—
Nozaki, Hiromi; and Hara, Haruo, 4,118,974, Cl. 73-61.400.

Harayda, George Michael, to RCA Corporation. Data encoding keyboard. 4,120,044, Cl. 364-900.000.

Harazoe, Yoshiaki; and Kurakami, Shigeru, to Kabushiki Kaisha Komatsu Seisakusho. Monitor system for construction vehicles. 4,119,943, Cl. 340-52.00F.

Harben, Grover S., Jr., to Stork-Gamco, Inc. Opening cut machine. 4,118,829, Cl. 17-11.000.

Hardtmann, Goetz E., to Sandoz, Inc. Unsaturated esters of 4-hydroxy-2-quinolinone-3-carboxylic acids and salts thereof. 4,119,720, Cl. 424-258.000.

Hargis, Robert L., to Aluminum Company of America. Non-wettable barrier to prevent conduction of electrical current by molten salt film. 4,119,504, Cl. 204-64.00R.

Harless, Friedrich, to Siemens Aktiengesellschaft. Hearing aid with adjustable frequency response. 4,119,814, Cl. 179-107.0FD.

Harnischfeger Corporation: *See*—
Wolfe, Roger M., 4,119,340, Cl. 296-137.00B.

Harris, Edward Bruce: *See*—
Hodakowski, Leonard Edward; Osborn, Clairborn Lee; and Harris, Edward Bruce, 4,119,640, Cl. 260-340.700.

Harris, Richard D.; Smith, Franklin G.; and Moshofsky, Jerome F., to R. D. Bussard & Son, Inc. Elastic fastener. 4,118,835, Cl. 24-73.0MC.

Harsco Corporation: *See*—
Burnham, Peter B., 4,118,817, Cl. 14-71.300.

Hartford Special Machinery Company, The: *See*—
Grohoski, Edward Gregory, 4,118,965, Cl. 72-102.000.

Hartigan, Richard Joseph, Jr., to Albany International Corp. Process for spinning poly (ethylene oxide) monofilament. 4,119,693, Cl. 264-178.00F.

Hartnagel, Hans Ludwig; and Bayraktaroglu, Burhan, to National Research Development Corporation. GaAs mosfet. 4,119,993, Cl. 357-23.000.

Hartung, Stephan; and Jaksch, Erhard, to Jenoptik Jena G.m.b.H. Device for positioning an object. 4,118,869, Cl. 33-174.0TA.

Hartung, Willy: *See*—
Alenrot, Lennart; Hartung, Willy; Lund, Torbjorn; and Aberg, Ulf, 4,119,421, Cl. 65-14.000.

Hase, Akira: *See*—
Aoki, Yutaka; Hase, Akira; Ito, Jiro; and Nagai, Hisomu, 4,119,409, Cl. 44-1.00R.

Hase, Takashi: *See*—
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.

Hashimoto, Masaru, to Tokyo Shibaura Electric Company, Ltd. Constant current circuit. 4,119,869, Cl. 307-296.00R.

Hashimoto, Yukio: *See*—
Morokawa, Shigeru; and Hashimoto, Yukio, 4,119,867, Cl. 307-225.00C.

Hasler AG: *See*—
Hafner, Emanuel; and Forss, Bertil, 4,119,804, Cl. 179-15.0AL.

Hass, Jurgen, to Daimler-Benz Aktiengesellschaft. Internal combustion engine with dry sump lubrication. 4,119,178, Cl. 184-1.500.

Hastings, Dawson W.: *See*—
Wheeler, Keith A.; and Hastings, Dawson W., 4,119,156, Cl. 172-386.000.

Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, to Central Glass Co., Ltd.; and Kawasaki Jukogyo Kabushiki Kaisha. Method of recovering heat of combustion waste gas arising from glass tank furnace. 4,119,395, Cl. 431-11.000.

Hattori, Kyo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculating device in an internal combustion engine. 4,119,071, Cl. 123-119.00A.

Hattori, Masumi: *See*—
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.

Hayakawa, Masao; and Nomura, Masahiro, to Sharp Kabushiki Kaisha. Semiconductor device for use in an electronic apparatus having a plurality of circuit boards. 4,120,041, Cl. 364-712.000.

Hayakawa, Wataru: *See*—
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.

Hayashi, Chiaki: *See*—
Noguchi, Ichiro; Hayashi, Chiaki; and Muroga, Hisashi, 4,119,875, Cl. 310-248.000.

Hayashi, Kazuo; and Kamijo, Ken, to Nissan Motor Company, Ltd. Electrostatic dust precipitator. 4,119,415, Cl. 55-124.000.

Hayashi, Kazuo; and Kamijo, Ken, to Nissan Motor Company, Ltd. Electrostatic precipitator. 4,119,416, Cl. 55-136.000.

Hayashi, Kiyoshi, to Shin Shirasuna Electric Corp. Method and apparatus for detecting whether phase difference between two signals is constant. 4,119,910, Cl. 324-83.00R.

Hayashi, Kosei: *See*—
Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, 4,118,892, Cl. 47-66.000.

Hayashi, Minoru; and Kishi, Kazuo, to Daicel Ltd. Rocket motor comprising combustible case, nozzle, and fins. 4,119,036, Cl. 102-49.300.

Hayashida, Yukio: *See*—
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, 4,119,542, Cl. 210-360.00A.

Hayden, Daniel B.; Smith, George W.; and Kaplit, Michael, to General Motors Corporation. Heater control system for liquid crystal device. 4,119,842, Cl. 250-201.000.

Hayes, John C.; and Pollitzer, Ernest L., to UOP Inc. Dehydrocyclization with an acidic multimetallic catalytic composite. 4,119,529, Cl. 208-139.000.

Hayes, William F.: *See*—
Tucker, Helen G.; Tanney, John W.; and Hayes, William F., 4,118,973, Cl. 73-55.000.

Hazard, James E., to Scott Paper Company. Pack separation and transfer apparatus. 4,119,221, Cl. 214-8.50A.

Hazemeijer B.V.: *See*—
Hilderink, Johannes H. L. A., 4,119,820, Cl. 200-153.0SC.

Hazen Research, Inc.: *See*—
Kindig, James K.; and Turner, Ronald L., 4,119,410, Cl. 44-1.00R.

Head, Dale R., to Precision, Inc. Programmable alternating current switch. 4,119,905, Cl. 323-21.000.

Hebden, Dennis: *See*—
Anderson, John Alfred; and Hebden, Dennis, 4,119,411, Cl. 48-62.00R.

Heckmaier, Manfred: *See*—
Loos, Herbert; Heckmaier, Manfred; and Reichert, Gerhard, 4,119,014, Cl. 90-1.60R.

Heeres, Jan, to Janssen Pharmaceutica N.V. 2-Aryl-4-aryloxymethyl-1,3-dioxolanes. 4,119,641, Cl. 260-340.90R.

Hegedus, Louis; and Summers, Jack C., to General Motors Corporation. Pellet type oxidation catalyst. 4,119,571, Cl. 252-466.0PT.

Heian, Glenn A., to Allis-Chalmers Corporation. Pan agglomeration with mechanical pellet classification. 4,119,393, Cl. 425-222.000.

Heiba, El Ahmadi I.; and Dessau, Ralph M., to Mobil Oil Corporation. Hexahydrobenzofuranone compounds. 4,119,646, Cl. 260-346.220.

Heimburger, Arthur Sherman. Vehicle undercarriage air deflector. 4,119,339, Cl. 296-1.00S.

Heinsohn, Howard H., Jr.: *See*—
Evers, William J.; and Heinsohn, Howard H., Jr., 4,119,788, Cl. 560-152.000.

Heki, Hideaki; Ozaki, Osamu; and Ohno, Masayoshi, to Tokyo Shibaura Electric Co., Ltd. Gas separator. 4,119,417, Cl. 55-158.000.

Hellemanns, Gerhard: *See*—
Simmrock, Karl Hans; and Hellemanns, Gerhard, 4,119,507, Cl. 204-80.000.

Hellwig, Rolf: *See—*
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Helm Instrument Company: *See—*
Moser, Richard A., 4,119,918, Cl. 328-165.000.
Henault, Andre: *See—*
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Hencye, Ronald E.: *See—*
Lanz, Donald D.; and Hencye, Ronald E., 4,118,995, Cl. 74-245.00S.
Henderson, David M.: *See—*
Abrams, Richard L.; and Henderson, David M., 4,119,930, Cl. 332-7.510.
Hendricks, Charles D., to PPG Industries, Inc. Detachable cylindrical power supply for induction type electrostatic spray gun. 4,120,016, Cl. 361-228.000.
Hengst, Bernd, to Sachs-Systemtechnik GmbH. Apparatus for purifying water. 4,119,517, Cl. 204-229.000.
Hengst, Bernd: *See—*
Paschakarnis, Peter; Hengst, Bernd; and Wychnanek, Rainer, 4,119,520, Cl. 204-276.000.
Henry, Varice F.: *See—*
United States of America, National Aeronautics and Space Administration; Johannsen, Klaus G.; Sabaroff, Samuel; and Henry, Varice F., 4,119,964, Cl. 343-17.700.
Hensel, Paul Christopher, to Post Office, The. Dielectric optical waveguide severing apparatus. 4,118,862, Cl. 30-124.000.
Hensley, Albert L., Jr.: *See—*
Hopkins, P. Donald; and Hensley, Albert L., Jr., 4,119,531, Cl. 208-251.00H.
Herbert Meister and Co.: *See—*
Meister, Herbert, 4,119,323, Cl. 277-235.00R.
Hermanson, Gerald P.; Rickel, David M.; and Carr, Robert J., to Dayron Corporation. Apparatus and method for connecting the ends of a cut length of ribbon. 4,119,448, Cl. 156-73.400.
Hernestam, Sven Erik Harry; Nilsson, Nils Arne; Nordvi, Curt Harry; and Willard, Lars-Olof, to AB Ferrosan. Piperidino derivatives. 4,119,711, Cl. 424-54.000.
Herwynen, John Alfred. Step ladder. 4,119,175, Cl. 182-125.000.
Hesston Corporation: *See—*
White, Allen Andrew, 4,118,918, Cl. 56-341.000.
Hewlett-Packard Company: *See—*
Pirkle, Sherman Jack, 4,119,903, Cl. 320-1.000.
Heyen, Wilfred L.; and Olinger, Keith D. Solar energy absorbing body and collector. 4,119,083, Cl. 126-270.000.
Heyward, Viola M.: *See—*
Moses, Lucius, 4,119,021, Cl. 99-425.000.
Hickman, Paul G. Multiple coin mechanism for newsrack. 4,119,192, Cl. 194-59.000.
Hiersig, Heinz M.: *See—*
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Hightower, John D.: *See—*
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Hilderink, Johannes H. L. A., to Hazemeijer B.V. Spring-drive mechanism for electric switches. 4,119,820, Cl. 200-153.0SC.
Hile, John W., to General Motors Corporation. Method of making ion implanted zener diode. 4,119,440, Cl. 148-1.500.
Hill, James E.; and Dahlstrom, Baesley I., to Dynetics Engineering Corp. Embossed character reader. 4,119,270, Cl. 235-440.000.
Hill, Lorimer K., to Siliconix Incorporated. Method and apparatus for sampling and holding an analog input voltage which eliminates offset voltage error. 4,119,960, Cl. 340-347.0AD.
Hilti Aktiengesellschaft: *See—*
Bisping, Heinz; and Schiefer, Erwin, 4,119,285, Cl. 248-72.000.
Schiefer, Erwin; and Bisping, Heinz, 4,118,838, Cl. 24-115.00R.
Himmele, Walter: *See—*
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Himmelmann, Wolfgang: *See—*
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Hinds, James J., to National Can Corporation. Article detection system with synchronous demodulation. 4,119,843, Cl. 250-222.0PC.
Hines, Ralph E., to Peterson, Merlin J., a part interest. Tool caddy. 4,119,044, Cl. 108-27.000.
Hinterkeuser, Jakob: *See—*
Abelitis, Andris; Behrendt, Artur; and Hinterkeuser, Jakob, 4,119,396, Cl. 432-106.000.
Hipp, James D., to Midland-Ross Corporation. Locking mechanism for a pair of railroad hopper doors. 4,119,041, Cl. 105-308.00R.
Hirabayashi, Takeo: *See—*
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Hiraki, Minoru: *See—*
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Hiraoka, Hiroyuki, to International Business Machines Corporation. Electro-lithography method. 4,119,688, Cl. 264-22.000.
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Hisatomi, Haruya: *See—*
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Hishinuma, Yukio: *See—*
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Hitachi Chemical Company, Ltd.: *See—*
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Itoh, Kenichi; Shinbo, Katsutoshi; and Watahiki, Minoru, 4,119,489, Cl. 176-76.000.
Iyama, Hiroyuki; Akatsuka, Mitsuo; and Tomura, Teruichi, 4,119,887, Cl. 315-101.000.
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.
Karino, Kimiji, 4,119,684, Cl. 261-44.00F.
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Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.
Sakamoto, Yuzaburo, 4,119,259, Cl. 228-4.500.
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Hitchcock, Ronald G.: *See—*
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Hitco: *See—*
Beckley, Don A., 4,119,481, Cl. 156-272.000.
Hnatchenko, Michael: *See—*
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Hobeg Hochtemperaturreaktor-Brennelement GmbH: *See—*
Kadner, Martin; Hackstein, Karl-Gerhard; and Spener, Gerhard, 4,119,563, Cl. 252-301.10S.
Hobson, John A.; and Schilling, Paul K., to H & S Industries, Inc. Floral display blocks of urea-formaldehyde foam. 4,119,757, Cl. 428-311.000.
Hoch, Fritz, to Gutos Metallschliessenfabrik Bader & Hoch KG. Buckle for a belt and the like. 4,118,837, Cl. 24-75.000.
Hodakowski, Leonard Edward; Osborn, Clairborn Lee; and Harris, Edward Bruce, to Union Carbide Corporation. Polymerizable epoxide-modified compositions. 4,119,640, Cl. 260-340.700.
Hodes, Harvey A., to United States of America, Army. Color photographic developer composition. 4,119,462, Cl. 96-66.300.
Hoebrechts, Albert J. G.; and van Eekelen, Alex H. A. M., to Monroe Auto Equipment Company. Connector assembly for windshield wipers. 4,118,825, Cl. 15-250.320.
Hoechst Aktiengesellschaft: *See—*
Kleiner, Hans-Jerg, 4,119,682, Cl. 260-952.000.
Hoelzl, Ludwig; Maenhardt, Joerg; Reisinger, Konrad; and Singer, Johannes, to Siemens Aktiengesellschaft. System for transmitting asynchronous bit transitions of data signals using time-division multiplexing. 4,119,795, Cl. 178-50.000.
Hoffman, Edward Hugo, to Skyway Recreation Products. Engine muffler. 4,119,174, Cl. 181-231.000.
Hoffmann, Hellmut; Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. Pesticidally active O-(1-fluoro-2-halogeno-ethyl)-thionophosphoric (phosphonic) acid esters. 4,119,715, Cl. 424-216.000.
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Liebman, Arnold Alvin; and Muccino, Richard Robert, 4,119,647, Cl. 260-397.200.
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Hollandsche Beton Groep N.V.: *See—*
Arentsen, Dirk, 4,119,159, Cl. 173-133.000.
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Zwarts, Johan Martin Carol; and Koops, Geert, 4,119,963, Cl. 343-17.2PC.
Hollender, Gottfried: *See—*
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Holleran, Eileen M. Apparatus for cleaning the lower portion of shoes. 4,118,818, Cl. 15-36.000.
Holley, Anthony G. Music training device. 4,119,010, Cl. 84-470.00R.
Hollingshead, William Shepherd; and Nowak, Edward Norbert, to Goodyear Tire & Rubber Company, The. Aqueous recovery of hydroquinone. 4,119,791, Cl. 568-768.000.
Hollingsworth & Vose Company: *See—*
Lawson, Grover C.; and Wilson, James C., 4,119,543, Cl. 210-496.000.
Hollis, Richard John, to Strachan & Henshaw Limited. Printing press with removable printing roll sleeve. 4,119,032, Cl. 101-216.000.
Hollister, Donald D. Method and means for improving the efficiency of

light generation by an electrodeless fluorescent lamp. 4,119,889, Cl. 315-248.000.
Holly, Harry H.: *See*—
Holly, James A.; and Holly, Harry H., 4,118,831, Cl. 17-32.000.
Holly, James A.; and Holly, Harry H., to Hollymatic Corporation. Molding device. 4,118,831, Cl. 17-32.000.
Hollymatic Corporation: *See*—
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Holmer, Erik Yngve: *See*—
Andersson, Lars-Olov; and Holmer, Erik Yngve, 4,119,774, Cl. 536-21.000.
Holmes, William A., to Polaroid Corporation. Self-developing motion picture viewer having controlled film imbibition. 4,119,370, Cl. 352-130.000.
Holmes, William K., to J. I. Case Company. Hydraulic circuit for hoisting fluid ram. 4,119,228, Cl. 214-394.000.
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Holmes, William K.: *See*—
Keller, Lynn L.; Pueschner, Philip R.; and Holmes, William K., 4,119,230, Cl. 214-394.000.
Holtom, Gerald Herbert. Manufacture of boat hulls and other hollow articles. 4,118,814, Cl. 9-6.00P.
Holub, Fred Frank; and Wilson, Phillip Steven, to General Electric Company. Plasticized polycarbonate composition. 4,119,603, Cl. 260-32.60R.
Holub, William R. Diagnostic test. 4,119,709, Cl. 424-1.000.
Holzman, Melvyn A., to Deutsch Company Electronic Components Division, The. Optical fiber connector utilizing opposed lenses. 4,119,362, Cl. 350-96.180.
Homco International, Inc.: *See*—
Smith, Homer Grafton, 4,119,151, Cl. 166-298.000.
Homeyer, Bernhard: *See*—
Hoffmann, Hellmut; Arlt, Dieter; Homeyer, Bernhard; and Hammann, Ingeborg, 4,119,715, Cl. 424-216.000.
Honeywell Inc.: *See*—
Castleman, B. Wayne; and Schluter, Bernard C., 4,119,851, Cl. 250-382.000.
Fulkerson, David E., 4,119,997, Cl. 357-36.000.
Haglund, Stephen A., 4,119,904, Cl. 320-48.000.
Honeywell Information Systems, Inc.: *See*—
Steiner, Gordon Lewis, 4,120,029, Cl. 364-200.000.
Honkanen, Arto: *See*—
Stolpe, Erik; Honkanen, Arto; and Laiho, Erkki, 4,119,452, Cl. 156-244.190.
Hooker Chemicals & Plastics Corp.: *See*—
Blair, Noel D., 4,119,763, Cl. 428-563.000.
Hope, Henry F.; and Hope, Stephen F. Transport roller rack. 4,118,998, Cl. 74-421.00R.
Hope, Stephen F.: *See*—
Hope, Henry F.; and Hope, Stephen F., 4,118,998, Cl. 74-421.00R.
Hopkins, Donald L., to Caterpillar Tractor Co. Pump drive for hydrostatic machines with external gears. 4,119,169, Cl. 180-66.00R.
Hopkins, P. Donald; and Hensley, Albert L., Jr., to Standard Oil Company (Indiana). Large-pore hydrodemetallization catalyst and process employing same. 4,119,531, Cl. 208-251.00H.
Hopkins, Phillip M.: *See*—
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Horie, Koji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Disc brake friction pad guide and support structure. 4,119,180, Cl. 188-73.500.
Horn, Jurgen; Batz, Hans-Georg; and Jaworek, Dieter, to Boehringer Mannheim GmbH. Process for fixing proteins onto carriers. 4,119,589, Cl. 260-6.000.
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Kirk, Robley Gordon; and Hornschuch, Hanns, 4,119,375, Cl. 308-9.000.
Hort, Eugene V., to GAF Corporation. Low pressure catalytic ethynylation process. 4,119,790, Cl. 568-855.000.
Hosbein, Hugh W., to Mossberg Hubbard a Division of Wanskuck Company. Apparatus and method for anticipating an empty spool condition. 4,119,279, Cl. 242-54.00R.
Hoshi, Hirohiko; Funayama, Toshio; Ishiguro, Kazuhiko; and Umehara, Hidetomo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and equipment for control of internal combustion engine including a fuel-reforming device. 4,119,061, Cl. 123-3.000.
Hoshidenki-Seizo Kabushiki Kaisha: *See*—
Uda, Masayuki, 4,119,878, Cl. 313-325.000.
Houghton, Frank Raymond: *See*—
Popplewell, Frank William; and Houghton, Frank Raymond, 4,119,313, Cl. 273-73.00K.
Howland, Robert Franklin; Jasovsky, George Anthony; and Galanti, Joseph Anthony, to General Foods Corporation. Method for fixing cryogenically condensed coffee aromatics in a glyceride carrier. 4,119,736, Cl. 426-386.000.
Hoxan Co., Ltd.: *See*—
Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, 4,118,984, Cl. 73-295.000.
Hoyer, Helge, to Rockwool International A/S. Fire retardant plate material. 4,119,755, Cl. 428-284.000.
Hruza, Denis E., Sr.: *See*—
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Hsieh, Dean Shui-Tien; Bright, Roselie Ann; and Rha, ChouKyun, to Massachusetts Institute of Technology. Method of making soybean beverages. 4,119,733, Cl. 426-46.000.
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, to U.S. Philips Corporation. Method of structuring thin layers. 4,119,483, Cl. 156-655.000.
Huck Manufacturing Company: *See*—
Corbett, Robert John, 4,118,969, Cl. 72-391.000.
Hudspeth, Thomas; and Keeling, Harmon H., to Hughes Aircraft Company. Transmission line switch. 4,119,931, Cl. 333-7.00R.
Huggins, George R.: *See*—
Preti, George; Huggins, George R.; and Tonzetich, Joseph, 4,119,089, Cl. 128-2.00R.
Hughes Aircraft Company: *See*—
Abrams, Richard L.; and Henderson, David M., 4,119,930, Cl. 332-7.510.
Bockrath, Thomas A., 4,119,932, Cl. 333-21.00A.
Hudspeth, Thomas; and Keeling, Harmon H., 4,119,931, Cl. 333-7.00R.
Stark, Louis, 4,119,971, Cl. 343-768.000.
Weglein, Rolf D.; and Wauk, Michael T., II, 4,119,934, Cl. 333-30.00R.
Hugl, Herbert; Otten, Hans-Gunter; Sommer, Richard; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. Water-soluble diphenylamine-azo-sulfatoalkoxyphenyl dyestuffs. 4,119,623, Cl. 260-206.000.
Hulme, Roger, to Exxon Research & Engineering Co. Novel graphite intercalation compounds and method of making same. 4,119,655, Cl. 260-440.000.
Hums, Dieter, to Intong AB. Ceramic composition for making stoneware products. 4,119,470, Cl. 106-45.000.
Hund, Clifford L.: *See*—
Brashear, Otto S., Jr.; Hund, Clifford L.; and Wehrenberg, Thomas M., 4,119,472, Cl. 106-57.000.
Hunt, Peter, to Lucas Industries Limited. Dynamo electric machine. 4,119,872, Cl. 310-61.000.
Hunter, Edwin J., to Toro Company, The. Fluid spray head and method adapted to spray specific pattern. 4,119,275, Cl. 239-456.000.
Huseby, Irvin C.: *See*—
Arendt, Ronald H.; Huseby, Irvin C.; and Borom, Marcus P., 4,119,437, Cl. 134-3.000.
Huston, Ernest Lee: *See*—
Fisher, Gordon Lloyd; and Huston, Ernest Lee, 4,119,501, Cl. 204-49.000.
Hutcherson, Brian K. Interacting steering-suspension system for a wheeled vehicle and the like. 4,119,170, Cl. 180-79.000.
Hutchins, James Peyton, to Procter & Gamble Company, The. Method for making diperoxyacids. 4,119,660, Cl. 260-502.00R.
Huwood Limited: *See*—
Saunders, Graham John, 4,118,939, Cl. 61-45.00D.
Hyyck Corporation: *See*—
Smart, Frederick R., 4,119,753, Cl. 428-234.000.
Ichikawa, Tetsuya: *See*—
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.
Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Electronic watch or clock and accessory devices therefor. 4,118,922, Cl. 58-23.0BA.
IDR, Inc.: *See*—
Mitchell, David S.; and Nagel, Robert H., 4,120,003, Cl. 358-142.000.
Igich, Victor. Multiple lumen endotracheal tube and cuff with limited inflation and pressure. 4,119,101, Cl. 128-351.000.
Iguchi, Shigeru; Iwata, Tamotu; and Yano, Tetsuo, to Mitsubishi Paper Mills, Ltd. Photographic binder comprising isobutylene-maleic anhydride copolymer. 4,119,463, Cl. 96-67.000.
ILC Data Device Corporation: *See*—
Lanton, Seymour, 4,119,959, Cl. 340-347.0SY.
Imperial Chemical Industries Limited: *See*—
Boyd, Violet; Fishwick, Brian Ribbons; and Watson, David John, 4,119,624, Cl. 260-207.100.
Ellis, Peter Manfrid; and Lester, Charles Martin, 4,119,447, Cl. 156-73.100.
Imura, Toshinori; and Yamashita, Maki, to Minolta Camera Kabushiki Kaisha. Small size single lens reflex camera. 4,119,982, Cl. 354-155.000.
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Bowers, George W., 4,120,012, Cl. 360-133.000.
Ingersoll-Rand Company: *See*—
Kirk, Robley Gordon; and Hornschuch, Hanns, 4,119,375, Cl. 308-9.000.
Inoue, Hajime: *See*—
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.
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Inpaver AG: *See—*
Degen, Hugo, 4,118,811, Cl. 5-62.000.
Institut Francais de Petrole: *See—*
Layotte, Pierre-Claude; and Cholet, Jacques, 4,118,994, Cl. 74-61.000.
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Intel Corporation: *See—*
Nichols, Andrew J., III, 4,119,955, Cl. 340-324.0AD.
Simko, Richard T., 4,119,995, Cl. 357-23.000.
International Business Machines Corporation: *See—*
Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,120,035, Cl. 364-602.000.
Hiraoka, Hiroyuki, 4,119,688, Cl. 264-22.000.
International Flavors & Fragrances Inc.: *See—*
Evers, William J.; and Heinsohn, Howard H., Jr., 4,119,788, Cl. 560-152.000.
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,119,574, Cl. 252-522.000.
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.
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Pfeil, Christian; and Breidenbach, Hans, 4,119,016, Cl. 91-449.000.
International Nickel Company, Inc., The: *See—*
Ettel, Victor Alexander; and Babjak, Juraj, 4,119,539, Cl. 210-73.00R.
Fisher, Gordon Lloyd; and Huston, Ernest Lee, 4,119,501, Cl. 204-49.000.
Whittle, John Edward, 4,119,514, Cl. 204-206.000.
International Standard Electric Corporation: *See—*
Barton, Paul, 4,119,969, Cl. 343-108.00M.
International Telephone and Telegraph Corporation: *See—*
Elderton, Peter Platt, 4,119,865, Cl. 307-118.000.
Intong AB: *See—*
Hums, Dieter, 4,119,470, Cl. 106-45.000.
Iobst, Stanley A.; and Cox, Howard W., to General Motors Corporation. Catalyzed one-shot system for molding thermoset polyurethanes. 4,119,594, Cl. 260-18.0TN.
Iowa State University Research Foundation, Inc.: *See—*
Larock, Richard Craig, 4,119,642, Cl. 260-343.600.
Ipri, Alfred Charles; and Scott, Joseph Hurlong, Jr., to RCA Corporation. Integrated circuit structure and method for making same. 4,119,992, Cl. 357-4.000.
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Ali Ja'afar, Hamedo; and Iseman, Walter J., 4,119,238, Cl. 220-211.000.
Isgur, Irving E.; Alexander, Robert R.; and Moy, Thomas P., to W. R. Grace & Co. Aqueous urethane codispersions. 4,119,602, Cl. 260-29.6NR.
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Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.
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Usui, Hideo; Ishige, Sadao; and Saeki, Keiso, 4,119,777, Cl. 544-6.000.
Ishiguro, Kazuhiko: *See—*
Hoshi, Hirohiko; Funayama, Toshio; Ishiguro, Kazuhiko; and Umehara, Hidetomo, 4,119,061, Cl. 123-3.000.
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Watanabe, Tomoyoshi; Yasui, Tsuneo; Ishikawa, Shigeo; and Okada, Kiyomichi, 4,119,385, Cl. 400-215.300.
Ishikawa, Shinzo: *See—*
Shono, Hiroaki; Noji, Toshio; Ishikawa, Shinzo; and Wakasa, Isao, 4,119,420, Cl. 65-1.000.
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Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, to (Zaidanhojin) Sagami Chemical Research Center. Process for producing a peptide. 4,119,493, Cl. 195-29.000.
Itaya, Kenji: *See—*
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Ito, Jiro: *See—*
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ITO Patent-AG: *See—*
Kremnitz, Walter, 4,119,900, Cl. 318-587.000.
Ito, Shintaro: *See—*
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.
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Itoh, Kenichi; Shinbo, Katsutoshi; and Watahiki, Minoru, to Hitachi, Ltd. Method of using nuclear reactor fuel assembly. 4,119,489, Cl. 176-76.000.
Itoh, Takaaki; and Kikuchi, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable venturi type carburetor. 4,119,685, Cl. 261-44.00C.
Ivana, Viktor: *See—*
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, 4,119,243, Cl. 221-298.000.
Ivy, John B.: *See—*
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Iwahara, Makoto, to Victor Company of Japan, Limited. Binaural multi-channel stereophony. 4,119,798, Cl. 179-1.0GQ.
Iwai, Naoji: *See—*
Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, 4,119,761, Cl. 428-472.000.
Iwasaki, Shozo, to Kabushiki Kaisha Akashi Seisakusho. Loading shaft positioning apparatus for hardness tester. 4,118,975, Cl. 73-81.000.
Iwasawa, Teruo, to Olympus Optical Company Ltd. Tape recorder apparatus. 4,120,009, Cl. 360-71.000.
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, to Nippon Electric Co., Ltd. Method of disposing of a ferrous-ion containing acidic aqueous waste by forming polycrystalline iron compound particles. 4,119,536, Cl. 210-50.000.
Iwata, Hiroshi; and Yamaoka, Tetsuo, to West Electric Co., Ltd. Camera using instant print film. 4,119,988, Cl. 354-289.000.
Iwata, Tamotu: *See—*
Iguchi, Shigeru; Iwata, Tamotu; and Yano, Tetsuo, 4,119,463, Cl. 96-67.000.
Iyama, Hiroyuki; Akatsuka, Mitsuo; and Tomura, Teruichi, to Hitachi, Ltd. Starter for discharge lamp. 4,119,887, Cl. 315-101.000.
Izraeli, Hyman, to Teschner, David. Crimping apparatus. 4,118,971, Cl. 72-410.000.
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Holmes, William K.; and Pueschner, Philip R., 4,119,229, Cl. 214-394.000.
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Schuck, Paul R.; and Baylor, John M., 4,119,157, Cl. 172-477.000.
Venable, Phillip G., 4,119,000, Cl. 74-479.000.
J. R. Haller, Ltd. Inc.: *See—*
Haller, Jack R., 4,120,015, Cl. 361-227.000.
Jackson, Ewart William, to Futters (London) Limited. Tool for wall anchors. 4,118,966, Cl. 72-114.000.
Jackson, R. Kelley. Collapsible golf cart trailer. 4,119,331, Cl. 280-639.000.
Jacob, Herbert; Blatte, Michael; and Kremser, Fritz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for making gallium arsenide or phosphide. 4,119,704, Cl. 423-299.000.
Jacob, Jean-Baptiste, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Control unit for a time-division telecommunications exchange. 4,119,803, Cl. 179-15.0AT.
Jacobs, David R.: *See—*
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Jacobson, Michael D.; and Grouwinkel, G. Franklin, to United States of America, Navy. Filter-cooler. 4,118,930, Cl. 60-266.000.
Jacobson, Sava. Mode switching and voltage regulator circuitry for a telephone answering device. 4,119,801, Cl. 179-6.00R.
Jacyno, Anthony; and Smith, Richard T., to McGraw-Edison Company. Assembly for removably attaching flexible cutting line element in grass trimmer. 4,118,865, Cl. 30-276.000.
Jain, Faquir Chand; and Melchy, Mahmoud Ahmed, to University of Connecticut. Heterojunction and process for fabricating same. 4,119,994, Cl. 357-16.000.
Jaksch, Erhard: *See—*
Hartung, Stephan; and Jaksch, Erhard, 4,118,869, Cl. 33-174.0TA.
Janowski, Kenneth R.: *See—*
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Jantsch, Ottomar; and Reiss, Karl, to Siemens Aktiengesellschaft. Apparatus for the implementation of a method for producing a sectional view of a body. 4,119,841, Cl. 250-213.0VT.
Japan Gasoline Company, Ltd.: *See—*
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, 4,119,568, Cl. 252-437.000.
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
Jaskolski, Stanley V.; Lade, Robert W.; and Schutten, Herman P., to

Cutler-Hammer, Inc. Thermally-sensitive, photo-controlled semiconductor switching systems. 4,119,845, Cl. 250-231.00R.

Jasovsky, George Anthony: *See—*
Howland, Robert Franklin; Jasovsky, George Anthony; and Galanti, Joseph Anthony, 4,119,736, Cl. 426-386.000.

Jaworek, Dieter: *See—*
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Jay, Pierre, to Rhone-Poulenc Industries. Dielectric compositions comprising polychlorobenzene-alkyl terphenyl mixtures. 4,119,555, Cl. 252-66.000.

Jazenski, Peter J.; and Manino, Louie G., to Lord Corporation. Adhesive compositions comprising (a) halogenated polyolefin (b) aromatic nitroso compound and (c) lead salts. 4,119,587, Cl. 260-3.500.

Jeambey, Calhoun G. Combination microwave oven and cooking utensil. 4,119,824, Cl. 219-10.55E.

Jenkins, Charles J., to Otis Engineering Corporation. Motion compensator. 4,118,954, Cl. 64-23.000.

Jenkins, John W.; and Nichols, A. G., Jr. Combination trampoline and rebounding device with detachable support means. 4,119,311, Cl. 272-65.000.

Jenkins, William Leon: *See—*
Boe, Thomas Jerald; Fell, Charles M.; and Jenkins, William Leon, 4,119,023, Cl. 100-2.000.

Jenoptik Jena G.m.b.H.: *See—*
Hartung, Stephan; and Jaksch, Erhard, 4,118,869, Cl. 33-174.0TA.

Jergl, Ivan: *See—*
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Jerome Alexander Cosmetics, Inc.: *See—*
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Jesty, John Bedford. Apparatus for dispensing discrete objects from a liquid. 4,119,242, Cl. 221-211.000.

Jet Spray Cooler, Inc.: *See—*
Arzberger, William A.; and Brown, Merle S., 4,119,191, Cl. 194-9.00T.

Jeumont-Schneider: *See—*
Baratin, Andre N., 4,119,806, Cl. 179-18.0FA.

Jhabvala, Murzban D., to United States of America, National Aeronautics and Space Administration. Complementary DMOS-VMOS integrated circuit structure. 4,119,996, Cl. 357-23.000.

Jidosha Kiki Co., Ltd.: *See—*
Masuda, Naosuke, 4,119,352, Cl. 303-6.00C.
Masuda, Naosuke; and Sunaga, Nobuo, 4,119,354, Cl. 303-24.00F.

Jim Dandy Company, The: *See—*
Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., 4,119,022, Cl. 99-532.000.

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Bernard, Vincent E., 4,119,252, Cl. 225-96.000.

Jirak, Thomas L., to Medtronic, Inc. Detachable power source with low current leakage. 4,119,103, Cl. 128-419.0PS.

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Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., 4,119,106, Cl. 131-17.00R.

Johnston, Russell A.: *See—*
Arendt, Henry P.; and Johnston, Russell A., 4,119,147, Cl. 166-155.000.

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Jones, Robert E. Method and apparatus for hacking bricks. 4,119,217, Cl. 214-6.00A.

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Ayotte, Richard F.; and Jones, Trevor O., 4,119,166, Cl. 180-14.00R.

Jos. Schneider & Co. Optische Werke: *See—*
Schnorrenberg, Josef, 4,119,294, Cl. 251-129.000.

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Lovness, Donald E., 4,119,429, Cl. 71-6.000.

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Hansen, Guenter; Kaack, Hermann; and Grund, Norbert, 4,119,621, Cl. 260-158.000.

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Iwasaki, Shozo, 4,118,975, Cl. 73-81.000.

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Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, 4,118,892, Cl. 47-66.000.

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Harazoe, Yoshiaki; and Kurakami, Shigeru, 4,119,943, Cl. 340-52.00F.
Matsuzaki, Hiroshi; and Tsukiji, Yoshihiro, 4,118,844, Cl. 29-27.00C.
Yoshitomi, Masahide; and Yonekura, Atsuo, 4,119,053, Cl. 115-35.000.

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Komorita, Fujio; and Nakahara, Muneo, 4,119,471, Cl. 106-47.00Q.

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Sato, Yo, 4,119,033, Cl. 101-348.000.

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Sato, Yo, 4,119,280, Cl. 242-68.500.

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Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, 4,118,920, Cl. 57-34.00R.

Kadner, Martin; Hackstein, Karl-Gerhard; and Spener, Gerhard, to Hobeg Hochtemperaturreaktor-Brennelement GmbH. Process for the production of fuel and fertile particles. 4,119,563, Cl. 252-301.10S.

Kaelble, David H., to Arroyo Dental Products Co. Brominated acrylate dental compositions. 4,119,610, Cl. 526-292.000.

Kaeser, Arthur L., to Parker Sweeper Company. Mobile blower unit for leaves and other debris. 4,118,826, Cl. 15-328.000.

Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, to Dai Nippon Toryo Co. Ltd. Fluorescent compositions. 4,119,562, Cl. 252-301.60S.

Kakogawa Plastics Kabushiki Kaisha: *See—*
Motokawa, Yutaka, 4,119,836, Cl. 219-528.000.

Kalinina, Nadezhda Vasilievna: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

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Kaman, Charles William, II, 4,119,009, Cl. 84-293.000.

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Kamath, Venkatesh: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.

Kamijo, Ken: *See—*
Hayashi, Kazuo; and Kamijo, Ken, 4,119,415, Cl. 55-124.000.
Hayashi, Kazuo; and Kamijo, Ken, 4,119,416, Cl. 55-136.000.

Kamm, Lawrence Joseph: *See—*
Price, Robert John; and Kamm, Lawrence Joseph, 4,119,161, Cl. 177-3.000.

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Kandyba, Grigory Ilich: *See—*
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.

Kanehiro, Haruyuki: *See—*
Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, 4,119,617, Cl. 528-360.000.

Kanocz, Julianna, to Raymond Lee Organization, Inc., The, a part interest. Collapsible reading stand. 4,119,289, Cl. 248-454.000.

Kaplit, Michael: *See—*
Hayden, Daniel B.; Smith, George W.; and Kaplit, Michael, 4,119,842, Cl. 250-201.000.

Karino, Kimiji, to Hitachi, Ltd. Variable stage type carburetor. 4,119,684, Cl. 261-44.00F.

Karius, Dietmar: *See—*
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, 4,119,037, Cl. 102-69.000.

Karl, Kurzius A. Preparing yeast raised bakery products. 4,119,731, Cl. 426-20.000.
Karlsson, John Axel: *See—*
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Kartalopoulos, Stamatios V.: *See—*
Raftopoulos, Demetrios D.; and Kartalopoulos, Stamatios V., 4,119,380, Cl. 73-800.000.
Karzmar, Ronald C.; and Stamm, Robert H., to Brooks & Perkins, Incorporated. Fuel storage rack. 4,119,859, Cl. 250-507.000.
Kasai, Masuo; Yoshizawa, Shigeru; and Hiroshima, Minoru, to Hitachi, Ltd. Magnetic bubble information writing device. 4,120,042, Cl. 365-2.000.
Kaszyk, Philip. Radar reflector. 4,119,965, Cl. 343-18.00C.
Katakura, Kageyoshi, to Hitachi Medical Corporation. Acoustic imaging method and apparatus. 4,119,939, Cl. 340-1.00R.
Kato, Akira: *See—*
Yamada, Yutaka; Kato, Akira; and Uchida, Tohru, 4,119,461, Cl. 96-1.800.
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Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, 4,118,920, Cl. 57-34.00R.
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Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.
Kaufmann, Friedrich: *See—*
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, 4,119,561, Cl. 252-301.10W.
Kausel, Ernst: *See—*
Kellerwessel, Hans; and Kausel, Ernst, 4,119,303, Cl. 266-92.000.
Kellerwessel, Hans; Kausel, Ernst; and Nissen, Reinhard, 4,119,699, Cl. 423-109.000.
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, to Vilnjussky Inzhenerno-Stroitelny Institut. Centrifugal elastic coupling. 4,118,953, Cl. 64-12.000.
Kawabata, Shosuke: *See—*
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192-24.000.
Kawada, Hirohito: *See—*
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Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.
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Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Kearney, Kevin David Nicholas: *See—*
Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, 4,119,772, Cl. 429-204.000.
Kearney & Trecker Corporation: *See—*
Johnstone, Richard, 4,120,030, Cl. 364-200.000.
Kirkham, Edward E., 4,118,871, Cl. 33-174.0PC.
Keating, John T., to Schenectady Chemicals, Inc. Solutions of polyester-imides. 4,119,605, Cl. 260-33.20R.
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Keating, John T., to Schenectady Chemicals, Inc. Electrical conductors having insulating coatings from solutions of polyester-imides. 4,119,758, Cl. 428-379.000.
Keating, Patrick N.; Koppelman, Roger F.; and Sawatari, Takeo, to Bendix Corporation, The. Underwater viewing system. 4,119,940, Cl. 340-5.00H.
Keck, Johannes: *See—*
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.
Keeling, Harmon H.: *See—*
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Kehl, Donald K.; and Crist, Eugene A. System for growing plants. 4,118,891, Cl. 47-59.000.
Keiter, Alfred, to Olympia Werke AG. Typing device including a type disc. 4,119,384, Cl. 400-144.200.
Keller, Lynn L.; Pueschner, Philip R.; and Holmes, William K., to J. I. Case Company. Hoisting mechanism for spreader with automatic attitude control means. 4,119,230, Cl. 214-394.000.
Kellerwessel, Hans; and Kausel, Ernst, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and device for precipitating copper cement from a copper solution mixed with iron. 4,119,303, Cl. 266-92.000.
Kellerwessel, Hans; Kausel, Ernst; and Nissen, Reinhard, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method for wet metallurgical processes. 4,119,699, Cl. 423-109.000.
Kelly, Donald A. Combined high density solar panels and vertical wind turbines. 4,119,863, Cl. 290-55.000.
Kelly, Joseph B., to PPG Industries, Inc. Method and apparatus for eliminating tong vents in a glass sheet furnace. 4,119,426, Cl. 65-111.000.
Kelso, David Matthews: *See—*
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Kendall Company, The: *See—*
Patel, Bhupendra C., 4,119,099, Cl. 128-349.00R.
Kennametal Inc.: *See—*
Kennedy, George C., 4,119,708, Cl. 423-659.000.
Kennedy, David P.: *See—*
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,118,860, Cl. 29-623.500.
Kennedy, George C., to Kennametal Inc. High temperature, high pressure process utilizing a ductile driver element. 4,119,708, Cl. 423-659.000.
Kennedy, John M.; and Kennedy, William R. Door frame and door assembly for a mine stopping. 4,118,894, Cl. 49-402.000.
Kennedy, William R.: *See—*
Kennedy, John M.; and Kennedy, William R., 4,118,894, Cl. 49-402.000.
Kenney, James F.; and Treadwell, Kenneth, to M&T Chemicals Inc. Process for preparing rigid polyurethane foams using latent catalysts. 4,119,585, Cl. 521-118.000.
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Kerr-McGee Corporation: *See—*
Baldwin, Roger A.; and Bills, John L., 4,119,523, Cl. 208-8.000.
Clapper, Thomas W., 4,119,519, Cl. 204-268.000.
Leonard, Robert E.; and Baldwin, Roger A., 4,119,524, Cl. 208-8.000.
Kettenes, Dirk Karel: *See—*
van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.
Kettlestrings, John S., to Cling-Cal Corporation. Magnetic dart toy. 4,119,316, Cl. 273-95.00R.
Khan, Aman Ullah, to Whirlpool Corporation. Refuse container for a compactor. 4,119,028, Cl. 100-218.000.
Kharitonova, Ljudmila Dmitrievna: *See—*
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.
Khokhar, Abdul Rauf: *See—*
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,653, Cl. 260-429.00R.
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,654, Cl. 260-429.00R.
Khrusch, Petr Romanovich: *See—*
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Kikuchi, Hideo: *See—*
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Kikuchi, Kazuo: *See—*
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Kimble, Thomas E., to D. H. Baldwin Company. Means for improving the repetition characteristics of an upright piano action. 4,119,008, Cl. 84-242.000.
Kimgir, Raisa Alexandrovna: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.
Kincheloe, Dan D.; Gregory, Elmo M.; Todd, Carl David; and Gould, Edson B., III. Utility usage monitoring systems. 4,120,031, Cl. 364-464.000.
Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for improving coal. 4,119,410, Cl. 44-1.00R.
King, Henry L.; and Wu, Chester C., to Monsanto Company. Process for making polyester polymer. 4,119,614, Cl. 528-283.000.
King, John O., Jr. Fastener with removable pintail and locking collet. 4,118,849, Cl. 29-240.000.
King, Leonard H.: *See—*
Bogner, Richard D.; and King, Leonard H., 4,119,970, Cl. 343-727.000.
Kirk, Robley Gordon; and Hornschuch, Hanns, to Ingersoll-Rand Company. Bearing and housing assembly. 4,119,375, Cl. 308-9.000.
Kirkham, Edward E., to Kearney & Trecker Corporation. Binary inspection probe for numerically controlled machine tools. 4,118,871, Cl. 33-174.0PC.
Kishi, Kazuo: *See—*
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Kishi, Yoshio: *See*—
Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, 4,120,005, Cl. 360-61.000.
Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, 4,120,006, Cl. 360-72.000.
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Kiyama, Masao: *See*—
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Klaren, Dick Gerrit, to Pieper, Gustav Adolf. Heat-exchanger comprising a system of granulate containing vertical tubes, and a method for operating the same. 4,119,139, Cl. 165-1.000.
Klein, Gerald B. Method for the manufacture of a can lid having a triple-fold, pushdown gate. 4,119,050, Cl. 113-121.00C.
Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Unsaturated phosphorus-containing carboxylic acid derivatives. 4,119,682, Cl. 260-952.000.
KLF Inventions and Patent Development and Marketing Corporation Ltd.: *See*—
Filip, Stanislaw Franz; and Miutel, Alexander, 4,119,583, Cl. 521-103.000.
Klinkenberg, Herbert: *See*—
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Klomp, Edward D., to General Motors Corporation. Rich core stratified charge spark ignition engine with peripheral exhaust port. 4,119,064, Cl. 123-30.00C.
Klug, Gottfried, to Pelzer-Kirst GmbH and Co. Shoulder bag. 4,119,127, Cl. 150-3.000.
Klussmann, Henning: *See*—
Reischl, Artur; Klussmann, Henning; and Velker, Eugen, 4,119,613, Cl. 526-64.000.
Knezevich, Mike. Process for reclaiming and upgrading thin-walled malleable waste material. 4,119,453, Cl. 75-0.50R.
Knippelmier, Gary H.: *See*—
Cosman, Armond D.; and Knippelmier, Gary H., 4,119,908, Cl. 324-3.000.
Knowles, Gregory W.; Sangesland, Odd E.; Vroom, Henry J.; and Madey, Robert W., to Grumman Aerospace Corporation. Solar energy collector. 4,119,085, Cl. 126-271.000.
Knowles, William S.; and Sabacky, Milton J., to Monsanto Company. Catalytic asymmetric hydrogenation. 4,119,652, Cl. 260-429.00R.
Knox, Howard T.; and Prete, Ernest, Jr., to Ancra Corporation. Buckle assembly with strap tightening mechanism. 4,118,833, Cl. 24-68.0CD.
Kny, Gunter; and Westphal, Otto, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V. Glycerin-alkylether-(1)-phosphoric acid-(3)-monocholine esters as enhancers of the natural resistance of the mammalian organism against non-carcinogenic pathogens. 4,119,714, Cl. 424-199.000.
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Kobayashi, Katsuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Flexible joint for a power transmission. 4,118,952, Cl. 64-12.000.
Kobayashi, Minoru; and Nemoto, Shigeru, to Olympus Optical Company Ltd. Small current switch. 4,119,822, Cl. 200-246.000.
Kobe Steel, Limited: *See*—
Tuda, Goro; Sawada, Yoshihisa; , and Mugitani, Yasuhiro, 4,119,015, Cl. 90-17.000.
Kochs Adler AG: *See*—
Scholl, Hans; and Bernewasser, Horst, 4,119,048, Cl. 112-121.120.
Kockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Abelitis, Andris; Behrendt, Artur; and Hinterkeuser, Jakob, 4,119,396, Cl. 432-106.000.
Koito Manufacturing Company Limited: *See*—
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Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, to Nippon Oil Company, Ltd. Process for fermentatively producing vitamin B_{12}. 4,119,492, Cl. 195-28.0VB.
Kokusan Denki Co., Ltd.: *See*—
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Kolacz, Ferdynand: *See*—
Ballendux, Gerardus M.; and Kolacz, Ferdynand, 4,119,119, Cl. 137-868.000.
Kolb, Frederick John, Jr., to Eastman Kodak Company. Magnetic head employing easy axis thin film inductor. 4,120,011, Cl. 360-111.000.
Koleske, Joseph Victor: *See*—
Smith, Oliver Wendell; and Koleske, Joseph Victor, 4,119,593, Cl. 260-18.0EP.
Komai, Takeshi; and Matsuyama, Kazuo, to Nihon Oil and Fats Co., Ltd. Novel peroxycarbonate. 4,119,657, Cl. 260-453.0RZ.
Komatsu, Shigeru: *See*—
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Komorita, Fujio; and Nakahara, Muneo, to Kabushiki Kaisha Ohara Kogaku. Optical glass. 4,119,471, Cl. 106-47.00Q.
Kondo, Iori, to Nissan Motor Company, Ltd. Vehicle seat belt assembly with improved buckle section. 4,119,344, Cl. 297-385.000.
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. System for generating tone source waveshapes. 4,119,005, Cl. 84-1.010.
Kondo, Toshihiro, to Kondo, Toshihiro; and Fuji Photo Film Co., Ltd. Photographic camera with automatic exposure control. 4,119,978, Cl. 354-38.000.
Konijnenberg, Erik; Vandenbooren, Franciscus H. A. M. J.; and Verheijen, Egidius J. M., to Stamicarbon, B.V. Process for the preparation of 5-(4-aminobutyl) hydantoin and/or 1-ureido-5-aminocapronamide. 4,119,782, Cl. 548-313.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Nozaki, Hiromi; and Hara, Haruo, 4,118,974, Cl. 73-61.400.
Yamada, Yutaka; Kato, Akira; and Uchida, Tohru, 4,119,461, Cl. 96-1.800.
Konno, Masamitu: *See*—
Takahashi, Yutaka; Hakamata, Yoshio; and Konno, Masamitu, 4,119,952, Cl. 340-309.100.
Koops, Geert: *See*—
Zwarts, Johan Martin Carol; and Koops, Geert, 4,119,963, Cl. 343-17.2PC.
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, to Boehringer Ingelheim GmbH. 1-Phenoxy-2-hydroxy-3-alkynylamino-propanes and salts thereof and treatment of coronary diseases therewith. 4,119,728, Cl. 424-324.000.
Koppelman, Alan J.: *See*—
Barber, Lloyd L.; and Koppelman, Alan J., 4,119,377, Cl. 312-344.000.
Koppelman, Roger F.: *See*—
Keating, Patrick N.; Koppelman, Roger F.; and Sawatari, Takeo, 4,119,940, Cl. 340-5.00H.
Koppers Company, Inc.: *See*—
Bright, Robert Harding, 4,119,226, Cl. 214-152.000.
Korekawa, Takashi: *See*—
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, 4,119,542, Cl. 210-360.00A.
Korf-Stahl AG.: *See*—
Elsner, Emil A.; Ameling, Dieter Ch.; Assenmacher, Rolf; and Fuchs, Gerhard, 4,119,792, Cl. 13-32.000.
Kornylak Corporation: *See*—
Kornylak, Edward T., 4,119,190, Cl. 193-35.00A.
Kornylak, Edward T., to Kornylak Corporation. Low temperature rollerway brake. 4,119,190, Cl. 193-35.00A.
Korotchenko, Nina Ivanovna: *See*—
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.
Korte, Helmut Gerhard, to Autospin, Inc. Burnishing attachment. 4,118,846, Cl. 29-90.00R.
Kosaka, Yujiro: *See*—
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,119,590, Cl. 260-8.000.
Koschorke, Herbert: *See*—
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, 4,119,561, Cl. 252-301.10W.
Kotschak, Otto; and Frank, Richard, to Siemens Aktiengesellschaft. Vacuum-tight windows for passage of X-rays or similar penetrating radiation. 4,119,234, Cl. 220-2.10R.
Kouchi, Susumo: *See*—
Yamauchi, Tadashi; Akune, Mikio; and Kouchi, Susumo, 4,119,538, Cl. 210-67.000.
Kovacs, Ernest: *See*—
Boyer, John A.; Cross, Robert; Kovacs, Ernest; and Valentino, Ralph J., 4,119,211, Cl. 214-1.0BH.
Kovalenko, Dmitry Korneevich: *See*—
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, to Seiko Koki Kabushiki Kaisha. Control device of a shutter for a camera. 4,119,986, Cl. 354-258.000.
Koyama, Yoshio. Long-distance spraying device for fire hose. 4,119,152, Cl. 169-25.000.
Koyo Seiko Company Limited: *See*—
Okuda, Hiroji, 4,118,967, Cl. 72-239.000.
Kozlov, Evgeny Mikhailovich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Kozyrev, Anatoly Alexandrovich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich;

Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Krafft, Kurt, to Systems Design & Development. Powder room and bathroom system and method of assembling same. 4,118,854, Cl. 29-428.000.

Krajicek, Richard W.: *See*—
Sperry, John S.; Krajicek, Richard W.; and Cradeur, Robert R., 4,118,925, Cl. 60-39.050.

Kraley, Lee E.: *See*—
Maher, Robert H.; and Kraley, Lee E., 4,119,735, Cl. 426-264.000.

Krasinskaya, Alexandra Leonidovna: *See*—
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Kratochvil, John F., to Swift & Company. Method for rapidly producting cheese. 4,119,732, Cl. 426-36.000.

Kregl, Josef: *See*—
Vogtmann, Lothar; Braun, Martin; and Kregl, Josef, 4,119,256, Cl. 226-177.000.

Kreighbaum, William E.: *See*—
Comer, William T.; and Kreighbaum, William E., 4,119,729, Cl. 424-330.000.

Kreitner, Charles A., to Lambert Brake Corporation. Auxiliary release apparatus for a hydraulic pressure releasable brake. 4,119,355, Cl. 303-85.000.

Kremnitz, Walter, to ITO Patent-AG. Method and system for the automatic orientation and control of a robot. 4,119,900, Cl. 318-587.000.

Kremser, Fritz: *See*—
Jacob, Herbert; Blatte, Michael; and Kremser, Fritz, 4,119,704, Cl. 423-299.000.

Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Method and equipment for measuring the distance between two points. 4,119,890, Cl. 315-377.000.

Kretztechnik Gesellschaft m.b.H.: *See*—
Kretz, Carl, 4,119,890, Cl. 315-377.000.

Kroehler Mfg. Co.: *See*—
Pentzien, Fred R., 4,119,343, Cl. 297-264.000.

Kroenke, William Joseph; and Nicholas, Paul Peter, to B. F. Goodrich Company, The. Solid solution catalyst containing iron cations for the oxychlorination of an alkane. 4,119,570, Cl. 252-466.00J.

Krol, Mira-Ljudmila Solomonovna: *See*—
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.

Kronogard, Sven-Olof, to United Turbine AB & Co. Kommanditbolag. Gas turbine power plant. 4,118,927, Cl. 60-39.16R.

Kroyer, Karl Kristian Kobs. Method of making a blistered silicate material. 4,119,434, Cl. 106-306.000.

Kruger, Gerd: *See*—
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.

Krupich, Vladimir Vladimirovich: *See*—
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.

Kubala, Sidney W.: *See*—
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Kubata Ltd.: *See*—
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192-24.000.

Kuchenbecker, Morris W., to American Can Company. Reclosable hinged blister card package. 4,119,203, Cl. 206-461.000.

Kuehne, William M.: *See*—
Goeppner, Ronald R.; Kuehne, William M.; and Russell, Timothy D., 4,118,972, Cl. 73-40.000.

Kuhn, Robert A., to American Electrical Heater Company. Device for cleaning soldering iron tips. 4,118,821, Cl. 15-104.920.

Kukota, Jury Pavlovich: *See*—
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Kulakova, Valentina Kirillovna: *See*—
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.

Kummer, Werner: *See*—
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Kun, Leslie Charles, to Union Carbide Corporation. Improved heat exchanger headering arrangement. 4,119,144, Cl. 165-175.000.

Kupsky, George A., to Owens-Illinois, Inc. Segmented gas discharge display panel device and method of manufacturing same. 4,119,378, Cl. 316-19.000.

Kurakami, Shigeru: *See*—
Harazoe, Yoshiaki; and Kurakami, Shigeru, 4,119,943, Cl. 340-52.00F.

Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, to Hoxan Co., Ltd. Liquid level indicator for an extremely low temperature-liquefied gas employing a superconductor wire. 4,118,984, Cl. 73-295.000.

Kurita, Hideaki: *See*—
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.

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Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, 4,118,984, Cl. 73-295.000.

Kurz, Maurice, to Societe DETEC S.A. Installation for disinfecting, by the action of formaldehyde. 4,119,400, Cl. 422-298.000.

Kuwahara, Kenji: *See*—
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.

Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, to Tokyo Shibaura Electric Co., Ltd. Heat radiation anode. 4,119,761, Cl. 428-472.000.

Kvande, Roger J. Digital linear interface system. 4,119,802, Cl. 179-15.0FD.

Kydonieus, Agis Frank. Blood and intravenous solution bag. 4,119,267, Cl. 229-53.000.

Lacroix, Guy: *See*—
Thizy, Andre; Pillon. Daniel; Debourge, Jean-Claude; and Lacroix, Guy, 4,119,724, Cl. 424-45.000.

Lade, Robert W.: *See*—
Jaskolski, Stanley V.; Lade, Robert W.; and Schutten, Herman P., 4,119,845, Cl. 250-231.00R.

Lagunov, Lev Lvovich: *See*—
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Laiho, Erkki: *See*—
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Lam, Charles Tak Wai, to Miles Laboratories, Inc. Test means and method for interference resistant determination of oxidizing substances. 4,119,405, Cl. 422-56.000.

Lambert Brake Corporation: *See*—
Kreitner, Charles A., 4,119,355, Cl. 303-85.000.

Lamlee, Stewart. Wearable seedling container. 4,118,889, Cl. 47-14.000.

Lamons Metal Gasket Company: *See*—
Owen, A. B.; Gifford, Bruce M.; Bahl, Horst H.; and Akins, Lewis F., 4,118,850, Cl. 29-243.520.

Lampman, William T.: *See*—
Johnson, Philip P.; and Lampman, William T., 4,119,116, Cl. 137-387.000.

Land, Edwin H., to Polaroid Corporation. Electrical cells and batteries. 4,119,770, Cl. 429-152.000.

Landis & Gyr: *See*—
Greenaway, David Leslie, 4,119,361, Cl. 350-1.100.

Lange, Wilhelm: *See*—
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.

Lanton, Seymour, to ILC Data Device Corporation. Multi-bit function generator. 4,119,959, Cl. 340-347.0SY.

Lanz, Donald D.; and Hencye, Ronald E., to Omark Industries, Inc. Integral tie strap and rivet assemblies for saw chains. 4,118,995, Cl. 74-245.00S.

Larock, Richard Craig, to Iowa State University Research Foundation, Inc. Butenolide synthesis via carbonylation of vinylmercurials in the presence of inorganic salts. 4,119,642, Cl. 260-343.600.

Larsen, Eric R.; and Ecker, Ernest L., to Dow Chemical Company, The. Method for recovering hydrogen bromide gas. 4,119,413, Cl. 55-71.000.

Larsson, Roland Axel: *See*—
Paitula, Hannu Olli; and Larsson, Roland Axel, 4,119,281, Cl. 242-107.000.

Lavenir, Roger: *See*—
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.

Laviana, Lawrence J.; Rhodes, Mark H., Jr.; and Doyle, Edward J., to M. H. Rhodes, Inc. Thermostat controller. 4,119,936, Cl. 337-303.000.

Lawson, Grover C.; and Wilson, James C., to Hollingsworth & Vose Company. Filter medium and method of making same. 4,119,543, Cl. 210-496.000.

Layotte, Pierre-Claude; and Cholet, Jacques, to Institut Francais de Petrole. Movable device for generating acoustic shear waves in the earth. 4,118,994, Cl. 74-61.000.

Layton, James Ronald: *See*—
Adams, Dustin Stetson; Field, Frederick C., Jr.; and Layton, James Ronald, 4,118,921, Cl. 57-140.00R.

Lazarus, Arnold: *See—*
Criglar, John J.; and Lazarus, Arnold, 4,119,007, Cl. 84-1.140.
Leader, Victor. Method of cutting and bagging grass. 4,118,917, Cl. 56-1.000.
Leclair, Robert A., to General Electric Company. Surge tank for pneumatically operated motors. 4,118,936, Cl. 60-720.000.
Lee, James D. Protective guard for an ignition switch on a steering column of a motor vehicle. 4,118,961, Cl. 70-237.000.
Lee, James Kelly: *See—*
Frank, Lee Fitzpatrick; and Lee, James Kelly, 4,119,979, Cl. 354-50.000.
Leenhouts, Albert C., to Superior Electric Company, The. Pulse to step motor stabilizing circuit. 4,119,901, Cl. 318-685.000.
Legendre, Philippe; and Nef, Jean-Marie, to Thomson-CSF. Distortion corrector for wide-band transistorized amplification stages. 4,119,923, Cl. 330-284.000.
Lehman, Dale T.: *See—*
Thut, Bruno H.; and Lehman, Dale T., 4,119,141, Cl. 165-82.000.
Lehmann, Gunter: *See—*
Aicher, Albrecht; Haas, Hans; Diem, Hans; Dudeck, Christian; Brunnmueller, Fritz; and Lehmann, Gunter, 4,119,673, Cl. 260-603.00C.
Leighton, Howard Noyes; Siverling, Michael McHugh; and Wilfinger, Raymond John. Optical signal processor. 4,119,947, Cl. 340-146.3AG.
Lemaitre, Gerard R., to Agence Nationale de Valorisation de la Recherche- A.N.V.A.R. Mirrors with a variable focal distance. 4,119,366, Cl. 350-295.000.
Lemon, Maurice Charles; and Spear, John Francis, to Universal Towel Company. Washing machines and rinsing machines. 4,118,958, Cl. 68-22.00R.
Lendi, Georges; Voinescu, Nicolae; and De Trey, Rene, to Tesa S.A. Micrometer head for internal measurement instrument. 4,118,867, Cl. 33-164.00C.
Lenox, Clayton R., to General Motors Corporation. Clinch weld fastener and method of securing panels together. 4,119,827, Cl. 219-98.000.
Leo Pharmaceutical Products Ltd. A/S Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
von Daehne, Welf; and Rasmussen, Poul Rodbroe, 4,119,717, Cl. 424-238.000.
Leonard, Robert E.; and Baldwin, Roger A., to Kerr-McGee Corporation. Coal deashing process having improved solvent recovery techniques. 4,119,524, Cl. 208-8.000.
Lequeux, Christian, to Union Financiere et Industrielle S.A. Method of interconnecting two members. 4,118,855, Cl. 29-447.000.
Lerman, Russell E., to United States of America, Army. Variable time fuze. 4,119,040, Cl. 102-249.000.
Lester, Charles Martin: *See—*
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LeVeen, Harry H. Radio frequency treatment of tumors while inducing hypotension. 4,119,102, Cl. 128-413.000.
Lever Brothers Company: *See—*
Postlethwaite, Dennis, 4,119,557, Cl. 252-99.000.
Van Dam, Antonius Franciscus, 4,119,564, Cl. 252-312.000.
Levy, Stephen David; and Diehl, Robert Eugene, to American Cyanamid Company. 3,4-Xylidine compounds which are useful as herbicides and as intermediates in the preparation of 2,6-dinitro-3,4-xylidine herbicides. 4,119,669, Cl. 260-577.000.
Lewchuk, Richard R., to PPG Industries, Inc. Glazing tool. 4,118,911, Cl. 52-749.000.
Lewis, Bernard L., to United States of America, Navy. Multiple memory adaptive MTI. 4,119,962, Cl. 343-7.700.
Lewis, Henry Garton, Jr.; and Calo, Seraphin Bernard, to RCA Corporation. Error detection and correction. 4,119,945, Cl. 340-146.1AQ.
Lewis, Joseph J.; and Webb, Robert L., to SK&F Lab Co. Process for preparing 4-substituted imidazole compounds. 4,119,781, Cl. 548-337.000.
Lewis, Mattie. Restraining garment. 4,119,095, Cl. 128-134.000.
Lewis, Thomas R.; and Michne, William F., to Sterling Drug Inc. Process for preparing hexahydro-11 (eq)-$CH_2CH_2COR_5$-2,6-methano-3-benzazocines. 4,119,628, Cl. 260-293.540.
LGZ Landis & Gyr Zug AG: *See—*
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Liautaud, Jean. Marine platform for offshore drilling operations and the like. 4,118,942, Cl. 405-204.000.
Libbey-Owens-Ford Company: *See—*
Marriott, James G., 4,119,425, Cl. 65-107.000.
Revells, Robert G., 4,119,427, Cl. 65-159.000.
Licentia Patent-Verwaltungs-G.m.b.H: *See—*
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Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Schach, Robert; and Scholl, Peter, 4,119,868, Cl. 307-253.000.
Lieber, Albert J., to General Engineering & Applied Research, Inc. Streak camera tube. 4,120,002, Cl. 358-111.000.
Liebman, Arnold Alvin; and Muccino, Richard Robert, to Hoffmann-La Roche Inc. 25-Hydroxycholecalciferol-23,24-^{3}H and process for the preparation thereof. 4,119,647, Cl. 260-397.200.
Lier, Pierre: *See—*
Greenwald, Harry; and Lier, Pierre, 4,119,237, Cl. 220-210.000.
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., to International Flavors & Fragrances Inc. 4-Hydroxy-2,4,6,6-tetramethyl cyclohex-2-en-1-one perfume compositions. 4,119,574, Cl. 252-522.000.
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Substituted-norbornane perfumes compositions. 4,119,577, Cl. 252-522.000.
Lindgren, Erik Gustaf, to Telefonaktiebolaget L M Ericsson. Fire detector utilizing two bandwidths of radiation. 4,119,949, Cl. 340-630.000.
Link, Joseph: *See—*
Perkins, Carroll R.; Cable, Jesse F., III; and Link, Joseph, 4,120,022, Cl. 361-395.000.
Linker Machines, Inc.: *See—*
Melanson, Leslie B., 4,118,828, Cl. 17-1.00F.
Linkowski, Stanley A., to Chromalloy Alcon, Inc. A.C. Interlock plug, contact and method. 4,119,360, Cl. 339-217.00S.
Lipatova, Tatyana Esperovna: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.
Lipschutz, Paul, to Neiman S.A. Adjustable locking device immobilized by a safety lock. 4,118,960, Cl. 70-59.000.
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Litty, Francis Edward: *See—*
Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., 4,119,534, Cl. 209-291.000.
Liu, Hsing Ching; and Liu, Lan-dih. Educational toy. 4,118,877, Cl. 35-9.00R.
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Liu, Hsing Ching; and Liu, Lan-dih, 4,118,877, Cl. 35-9.00R.
Ljubimov, Grigory Alexandrovich: *See—*
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Lobering, Joachim, to Zimmer Aktiengesellschaft. Process for the production of linear condensates of phenol and formaldehyde. 4,119,611, Cl. 528-139.000.
Lohberg, Werner. Feed system for internal combustion engines to which a fuel-air mixture and water vapor are supplied. 4,119,063, Cl. 123-25.00B.
Lohning, Franklin M., to Franklin Enterprises, Inc. Mixing apparatus. 4,120,051, Cl. 366-142.000.
Long, William J., to United States Gypsum Company. Gypsum wallboard-making process and product. 4,119,752, Cl. 428-198.000.
Longo, John M.: *See—*
Maas, Edward T., Jr.; and Longo, John M., 4,119,559, Cl. 252-301.10R.
Loos, Herbert; Heckmaier, Manfred; and Reichert, Gerhard, to Carl Hurth Maschinen- und Zahnradfabrik. Method for precision working, particularly shaving, of gears. 4,119,014, Cl. 90-1.60R.
Lopez, John A.: *See—*
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Lord Corporation: *See—*
Jazenski, Peter J.; and Manino, Louie G., 4,119,587, Cl. 260-3.500.
Lord, Richard G.; Bussjager, Rudy C.; and Geary, David F., to Carrier Corporation. High performance heat exchanger. 4,118,944, Cl. 62-98.000.
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Daeninckx, Jean; and Chesbeuf, Bernard, 4,119,578, Cl. 252-548.000.
Morane, Bruno, 4,118,874, Cl. 34-101.000.
Lorenz, Horst, to Th. Kieserling & Albrecht. Apparatus for pulling elongated workpieces. 4,119,254, Cl. 226-112.000.
Losch, E. R., to Losch, Joseph D. Electrical radiant heat food warmer and organizer. 4,119,834, Cl. 219-354.000.
Losch, Joseph D.: *See—*
Losch, E. R., 4,119,834, Cl. 219-354.000.
Love, William Darrell: *See—*
Shelley, Peter Stephen; Love, William Darrell; and Stone, Barry Newell, 4,119,853, Cl. 250-385.000.
Lovness, Donald E., to Judd Ringer Corporation. Soil supplement. 4,119,429, Cl. 71-6.000.
Lowenheck, Konrad, to N. Civy & Cie, SA. Thread tension gage. 4,118,978, Cl. 73-144.000.
Lu, Chen-i, to Eastman Kodak Company. Method for manufacture of laminates which are useful as packaging materials. 4,119,743, Cl. 427-44.000.
Lu, Chen-i: *See—*
Williams, Robert Franklin, Jr.; and Lu, Chen-i, 4,119,479, Cl. 156-272.000.
Lubrizol Corporation, The: *See—*
Davis, Kirk Emerson, 4,119,549, Cl. 252-45.000.
Davis, Kirk Emerson; and Holden, Thomas Frederick, 4,119,550, Cl. 252-45.000.
Lucas Industries Limited: *See—*
Hunt, Peter, 4,119,872, Cl. 310-61.000.
Sivill, Alistair David, 4,118,932, Cl. 60-500.000.
Ludwig, Clarence H. Cutting blade. 4,119,004, Cl. 83-661.000.
Lukac, Frederick S.; and Zbryski, William P., to Allegheny Ludlum

Industries, Inc. Apparatus for treating strip. 4,119,109, Cl. 134-64.00R.
Luksch, Heinrich E.: *See—*
Choudhury, Hrishikesh; and Luksch, Heinrich E., 4,119,186, Cl. 192-0.096.
Lummus Company, The: *See—*
Riegel, Herbert; and Strangio, Vincent A., 4,119,705, Cl. 423-507.000.
Lund, Torbjorn: *See—*
Alenrot, Lennart; Hartung, Willy; Lund, Torbjorn; and Aberg, Ulf, 4,119,421, Cl. 65-14.000.
Lundbohm, Lennart: *See—*
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Lundgren, Bert Karl Gustaf; and Thaning, Gunnar, to Strabruken AB. Refractory composition for use in metallurgical furnaces. 4,119,473, Cl. 106-58.000.
Luthje, Holger: *See—*
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, 4,119,483, Cl. 156-655.000.
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Lyles, Bobby J., to Thiokol Corporation. Means for mounting solid propellant in a rocket motor. 4,118,928, Cl. 60-255.000.
M.A.T. Industries, Inc.: *See—*
Amoroso, Michael J., 4,119,346, Cl. 299-11.000.
M. H. Rhodes, Inc.: *See—*
Laviana, Lawrence J.; Rhodes, Mark H., Jr.; and Doyle, Edward J., 4,119,936, Cl. 337-303.000.
M.O. (Mitsui-Osaka Maritime Construction Company Limited): *See—*
Makaya, Shigetoshi, 4,119,541, Cl. 210-242.00R.
M&T Chemicals Inc.: *See—*
Arcilesi, Donald A., 4,119,502, Cl. 204-55.00R.
Kenney, James F.; and Treadwell, Kenneth, 4,119,585, Cl. 521-118.000.
Maas, Edward T., Jr.; and Longo, John M., to Exxon Research & Engineering Co. UO_2F_2 inclusion compositions. 4,119,559, Cl. 252-301.10R.
Machines Chambon: *See—*
Corse, Louis Gaston, 4,119,003, Cl. 83-341.000.
Macht, Jon A.; and Blinne, David L., to Owatonna Manufacturing Company, Inc. Mounting means for attaching an implement to a vehicle. 4,119,225, Cl. 214-145.00A.
Maddaloni, Ciro, to Voxson S.p.A. Electronic tuning system for radio receivers, with digital memorization of the signal frequency. 4,119,915, Cl. 325-452.000.
Madden, William M.: *See—*
Fowle, Norman F.; Madden, William M.; and Marshall, James F., 4,119,274, Cl. 239-265.290.
Maderspach, Andrea: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Madey, Robert W.: *See—*
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Madsen, Leonard P.: *See—*
Brower, Loyd R., Jr.; Madsen, Leonard P.; and Zutaut, Chesley L., 4,119,522, Cl. 204-300.0EC.
Maeda, Hidetoshi; and Sasaki, Takehiko, to Sharp Kabushiki Kaisha. Time information correction in combination timepiece and calculator. 4,120,036, Cl. 364-705.000.
Maeda, Takeshi: *See—*
Matsuda, Tsutomu; Maeda, Takeshi; Hirabayashi, Takeo; and Watanabe, Nobuyoshi, 4,119,465, Cl. 96-75.000.
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Maffrand, Jean-Pierre; and Porceillo, Jean-Marie, to Parcor. Piperazine compounds. 4,119,719, Cl. 424-250.000.
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Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.
Maher, Robert H.; and Kraley, Lee E., to Gerber Products Company. Cured meat spread and its preparation. 4,119,735, Cl. 426-264.000.
Mahoney, James F.: *See—*
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Wagner, Hans; and Maierhofer, Alfred, 4,119,738, Cl. 426-548.000.
Majure, James C.: *See—*
Outhwaite, Stephen; and Majure, James C., 4,119,846, Cl. 250-252.000.
Makaya, Shigetoshi, to M.O. (Mitsui-Osaka Maritime Construction Company Limited). Arrangement for disposing of fluid floating matter. 4,119,541, Cl. 210-242.00R.
Manigold, Alain: *See—*
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.
Manino, Louie G.: *See—*
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Goldschmidt, Rolf; Hansgen, Klaus; and Hiersig, Heinz M., 4,118,848, Cl. 29-159.200.
Manning, Roland Vernon, to Manning Target Systems Inc. Method of molding frangible targets. 4,119,694, Cl. 264-297.000.
Manning Target Systems Inc.: *See—*
Manning, Roland Vernon, 4,119,694, Cl. 264-297.000.
Mansen, David Joel. Method and means for beach restoration. 4,118,937, Cl. 405-30.000.
Mansson, Martin; and Torstenfelt, Ragnar, to Stal-Laval Turbin AB. Method of assembling a turbo-machine, apparatus for use in the method, and turbo machine constructed according to said method. 4,118,847, Cl. 29-156.80R.
Marbacher, Lothar, to Palitex Project Company GmbH. Yarn take-up and supply mechanism for use with textile machines. 4,118,919, Cl. 57-34.00R.
Marcussen, Henry, to Whirlpool Corporation. Centrifugal dispenser for washing machine agitator. 4,118,957, Cl. 68-17.00A.
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, to Chirana, koncern. Article dispensing device. 4,119,243, Cl. 221-298.000.
Margen, Peter Heinrich Erwin, to Aktiebolaget Atomenergi. Arrangement for transferring heat from the exhaust air leaving an enclosed volume to the input air supplied to said volume. 4,119,142, Cl. 165-104.00S.
Marien, Jozef Eduard: *See—*
Verlinden, Willy Gommaire; and Marien, Jozef Eduard, 4,119,849, Cl. 250-315.00A.
Marin, Allan; and Bradbery, Jack L., to Phone Devices Corporation. Pushbutton telephone apparatus with automatic dialing and combinational sequential control signalling capabilities. 4,119,810, Cl. 179-90.00K.
Marketing Information Systems Incorporated: *See—*
Bennett, William F., 4,119,482, Cl. 156-351.000.
Marley Cooling Tower Company, The: *See—*
Cates, Robert E., 4,119,140, Cl. 165-67.000.
Marquip, Inc.: *See—*
Marschke, Carl R., 4,119,219, Cl. 214-8.50A.
Marriott, James G., to Libbey-Owens-Ford Company. Method of bending a glass sheet to a sharp angle. 4,119,425, Cl. 65-107.000.
Marschke, Carl R., to Marquip, Inc. Batch feeder. 4,119,219, Cl. 214-8.50A.
Marshall, James F.: *See—*
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Martha, Eugene F.: *See—*
Ondis, Albert W.; Pizzuti, Everett V.; and Martha, Eugene F., 4,119,974, Cl. 346-145.000.
Martin, Ronald. Belt-type sander accessory. 4,118,897, Cl. 51-170.0EB.
Martin Wendel KG: *See—*
Hafner, Hermann; and Steiper, Otto, 4,119,227, Cl. 214-305.000.
Martino, Peter Vincent. Horizontal one step automatic plate processor. 4,119,991, Cl. 354-320.000.
Martres, Rene: *See—*
Brissot, Jean-Jacques Lucien Emile; Belouet, Christian; and Martres, Rene, 4,119,744, Cl. 427-45.000.
Marvin Glass & Associates: *See—*
Morrison, Howard J.; Fletchic, Donald K.; and Baer, Ralph H., 4,119,844, Cl. 250-231.00R.
Masaki, Kenji; and Aono, Shigeo, to Nissan Motor Company, Ltd. Apparatus to control the ratio of air to fuel of air-fuel mixture applied to an internal combustion engine. 4,119,074, Cl. 123-124.00B.
Masaoka, Hiromu: *See—*
Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, 4,120,006, Cl. 360-72.000.
Masclet, Jean, to Messier-Hispano. Brake disc structure. 4,119,179, Cl. 188-73.200.
Mason, Paul B.; and Osman, Martin S., to Polaroid Corporation. Fluid applicator doctor blade. 4,119,990, Cl. 354-317.000.
Massachusetts Institute of Technology: *See—*
Bernacki, Stephen E., 4,119,855, Cl. 250-402.000.
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Hsieh, Dean Shui-Tien; Bright, Roselie Ann; and Rha, ChouKyun, 4,119,733, Cl. 426-46.000.
Szoke, Abraham, 4,119,509, Cl. 204-157.10R.
Mastroianni, Sal Thomas, to Motorola Inc. Method for forming a guarded Schottky barrier diode by ion-implantation. 4,119,446, Cl. 148-1.500.
Masuda, Naosuke, to Jidosha Kiki Co., Ltd. Hydraulic braking pressure control unit. 4,119,352, Cl. 303-6.00C.
Masuda, Naosuke; and Sunaga, Nobuo, to Jidosha Kiki Co., Ltd. Hydraulic brake control assembly. 4,119,354, Cl. 303-24.00F.
Maszk, Francis S.: *See—*
Coleman, William H.; and Maszk, Francis S., 4,118,933, Cl. 73-766.000.
Matson, Stephen L., to General Electric Company. Apparatus for maintaining the separation efficiency of immobilized liquid membranes in gas separation. 4,119,408, Cl. 422-169.000.
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura,

Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, to Mitsui-Nisso Corporation; Nippon Unicar Company, Limited; and Toyota Jidosha Kogyo Kabushiki Kaisha. Process for manufacturing high-resilient flexible urethan foams. 4,119,582, Cl. 521-112.000.

Matsuda, Tsutomu; Maeda, Takeshi; Hirabayashi, Takeo; and Watanabe, Nobuyoshi, to Ricoh Co., Ltd. Diazo copying material for secondary original. 4,119,465, Cl. 96-75.000.

Matsueda, Kenichi; and Kitamura, Takao, to Omron Tateisi Electronics Co. Electrical switch. 4,119,823, Cl. 200-302.000.

Matsuki, Masamitsu, to Nissan Motor Company, Ltd. Composite board structure including corrugated fiberboard and combination surface-covering and electrical-wiring arrangement incorporating the board structure. 4,119,794, Cl. 174-68.00R.

Matsuki, Toshiharu: *See*—
Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, 4,119,761, Cl. 428-472.000.

Matsuoka, Hiroo: *See*—
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, 4,119,568, Cl. 252-437.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, 4,119,542, Cl. 210-360.00A.

Matsuyama, Iwao: *See*—
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.

Matsuyama, Kazuo: *See*—
Komai, Takeshi; and Matsuyama, Kazuo, 4,119,657, Cl. 260-453.0RZ.

Matsuzaki, Hiroshi; and Tsukiji, Yoshihiro, to Kabushiki Kaisha Komatsu Seisakusho. Machine tool. 4,118,844, Cl. 29-27.00C.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V.: *See*—
Kny, Gunter; and Westphal, Otto, 4,119,714, Cl. 424-199.000.

Mayer, Peter; and Simeth, Claus, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for the flattening of sheets by means of suction. 4,119,309, Cl. 271-183.000.

Mayo, Haydn Frank: *See*—
Gordon, Sidney; Wilkins, John Thomas; and Mayo, Haydn Frank, 4,118,819, Cl. 15-49.00R.

Mazurkiewicz, Marian: *See*—
Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, 4,119,160, Cl. 175-67.000.

MBI, Inc.: *See*—
Schiffman, Murray M., 4,119,484, Cl. 156-659.000.

McCauley, Kenneth G. Minnow dipper. 4,118,807, Cl. 43-4.000.

McCracken, Mark M.: *See*—
Ross, Robert G.; and McCracken, Mark M., 4,118,866, Cl. 32-22.000.

McFarlane, Douglas A. Method and apparatus for threading worms on fishhooks. 4,118,881, Cl. 43-4.000.

McGraw-Edison Company: *See*—
Jacyno, Anthony; and Smith, Richard T., 4,118,865, Cl. 30-276.000.

McGuire, Charles H., to Motorola Inc. Fluid activated velocity switch. 4,119,819, Cl. 200-81.90R.

McMahon, Joseph F.: *See*—
Albulescu, Peter; and McMahon, Joseph F., 4,119,349, Cl. 299-2.000.

McMillan, Norman; and Dier, Henry M., to Dataproducts Corporation. Molded character belt with integral sleeves. 4,119,029, Cl. 101-111.000.

McMurtry, David Roberts: *See*—
Woodward, Clifford Stanley; and McMurtry, David Roberts, 4,118,997, Cl. 74-417.000.

McNeil Laboratories, Incorporated: *See*—
Carson, John Robert, 4,119,639, Cl. 260-326.350.

McReynolds, Glen Harold, Jr., to Esquire, Inc. Lens closure for sports light fixture. 4,120,023, Cl. 362-16.000.

McSherry, Thomas; and Gormley, Edward J. Anchorable tubular device. 4,118,910, Cl. 52-699.000.

Mead Corporation, The: *See*—
Stager, William R., 4,119,973, Cl. 346-75.000.

Mead Johnson & Company: *See*—
Comer, William T.; and Kreighbaum, William E., 4,119,729, Cl. 424-330.000.

Medtronic, Inc.: *See*—
Jirak, Thomas L., 4,119,103, Cl. 128-419.0PS.

Meginniss, Stephen Mason, III, to Extracorporeal Medical Systems, Inc. Double-action proportioning pump. 4,119,113, Cl. 137-99.000.

Mehaffy, Gordon E.; and Sawa, Kenneth B., to Beckman Instruments, Inc. Fluid switch. 4,119,120, Cl. 137-885.000.

Mehl, Wolfgang; and Monti, Roland, to Sublistatic Holding S.A. Reprographic apparatus and method. 4,119,374, Cl. 355-32.000.

Meister, Herbert, to Herbert Meister and Co. Heat and solvent resistant flexible gasket means and process for production thereof. 4,119,323, Cl. 277-235.00R.

Melanson, Leslie B., to Linker Machines, Inc. Apparatus for peeling sausages. 4,118,828, Cl. 17-1.00F.

Melehy, Mahmoud Ahmed: *See*—
Jain, Faquir Chand; and Melehy, Mahmoud Ahmed, 4,119,994, Cl. 357-16.000.

Melvin, Myron F. Metal base resistor. 4,119,937, Cl. 338-308.000.

Membrino, Robert J.; and Gaughan, John C., to Singer Company, The. Digital display data processor. 4,120,028, Cl. 364-200.000.

Merck & Co., Inc.: *See*—
Baldwin, John J., 4,119,630, Cl. 260-294.900.
Baldwin, John J.; and Ponticello, Gerald S., 4,119,718, Cl. 424-248.510.
Baldwin, John J., 4,119,721, Cl. 424-263.000.
Grier, Nathaniel; and Witzel, Bruce E., 4,119,779, Cl. 544-215.000.

Meredith, Joel B.: *See*—
Small, Robert F.; and Meredith, Joel B., 4,118,907, Cl. 52-115.000.

Merklinger, Harold M. Acoustic direction finder. 4,119,942, Cl. 340-6.00R.

Merlino, Mark F. Critical alignment loudspeaker system. 4,119,799, Cl. 179-1.00E.

Merrill, Arthur A. Assembling method and apparatus. 4,119,332, Cl. 281-25.00R.

Merten, Gerhard; and Schlusener, Horst, to Gewerkschaft Eisenhutte Westfalia. Coal plough having separately adjustable cutters and flexible fluid power and control lines therefor. 4,119,347, Cl. 299-34.000.

Messick, Bobby G.: *See*—
Newport, John J., III; and Messick, Bobby G., 4,119,632, Cl. 260-295.00R.

Messier-Hispano: *See*—
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Mesur-Matic Electronics Corp.: *See*—
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Metallgesellschaft Aktiengesellschaft: *See*—
Simmrock, Karl Hans; and Hellemanns, Gerhard, 4,119,507, Cl. 204-80.000.
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.

Metallwerk Max Brose & Co.: *See*—
Becker, Herbert, 4,118,893, Cl. 49-348.000.

Metteer, N. Bruce; and Quick, John D., to Motorola Inc. Constant rate sweep frequency generator. 4,119,927, Cl. 331-11.000.

Metzger, Lenard M.; and Johnson, Robert B., to Eastman Kodak Company. Overlap track servo for dynamic position correction in a rotary-head tape recorder. 4,120,008, Cl. 360-70.000.

Meyer, Rudolf: *See*—
Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, 4,119,464, Cl. 96-68.000.

Meza, Francisco: *See*—
Ocampo, Felipe; Meza, Francisco; and Aguirre, Francisco, 4,119,497, Cl. 203-29.000.

Mezentsev, Alexandr Nikolaevich: *See*—
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.

Michelotti, Victor Galileo. Knock-down shelving structure. 4,119,045, Cl. 108-156.000.

Michne, William F.: *See*—
Lewis, Thomas R.; and Michne, William F., 4,119,628, Cl. 260-293.540.

Michon, Maurice; and Sturel, Bernard, to Compagnie General d'Electrocite S.A. Laser head and application thereof to a laser generator device. 4,119,928, Cl. 331-94.50P.

Micklus, Michael J.; and Ou-Yang, David T., to Biosearch Medical Products Inc. Coated substrate having a low coefficient of friction hydrophilic coating and a method of making the same. 4,119,094, Cl. 128-132.00R.

Microdot Inc.: *See*—
Berecz, Imre, 4,119,130, Cl. 151-41.760.

Midland-Ross Corporation: *See*—
Durling, Harold, 4,119,351, Cl. 303-6.00M.
Hipp, James D., 4,119,041, Cl. 105-308.00R.
Jwuc, Karl J., 4,119,209, Cl. 213-121.000.

Midorikawa, Yoshio, to Glasrock Products, Inc. Method of manufacturing a marking pen having a nib and an ink reservoir integral therewith. 4,119,756, Cl. 428-295.000.

Mignen, Bernard, to Essilor International, Cie Generale d'Optique. Method of making an ophthalmic lens of progressively variable focal power. 4,118,853, Cl. 29-424.000.

Miles Laboratories, Inc.: *See*—
Clemens, Anton Hubert, 4,119,406, Cl. 422-81.000.
Lam, Charles Tak Wai, 4,119,405, Cl. 422-56.000.

Miller, John R., to Southern Railway Company. Method and apparatus for treating ballast. 4,119,154, Cl. 171-16.000.

Miller, Jorge. Electrolytic cell for treatment of water. 4,119,518, Cl. 204-263.000.

Miller, Laird F.: *See*—
Bambury, Ronald E.; Edwards, Michael L.; and Miller, Laird F., 4,119,775, Cl. 544-28.000.

Miller, Richard Foster. Certain azaphenoxathiin compounds. 4,119,629, Cl. 260-294.80B.

Miller, Stephen D.: *See*—
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,119,220, Cl. 214-8.50A.

Miller, William Joseph: *See*—
Golner, Jerold Julius; Miller, William Joseph; and Strout, Russell Brown, 4,119,251, Cl. 225-20.000.

Mimura, Yoshiyuki: *See*—
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.

Minnesota Mining and Manufacturing Company: *See—*
Frishman, Leslie O.; and Nelson, Kerry S., 4,119,373, Cl. 355-3.00R.
Minolta Camera Kabushiki Kaisha: *See—*
Imura, Toshinori; and Yamashita, Maki, 4,119,982, Cl. 354-155.000.
Tanaka, Harumi, 4,119,983, Cl. 354-197.000.
Mirdadian, Mohammad Kian. Methods and systems for use with pulse train circuitry. 4,120,032, Cl. 364-510.000.
Mish, Robert J.: *See—*
Naves, David G.; Aquino, Herman A.; and Mish, Robert J., 4,119,042, Cl. 105-368.00R.
Misiano, Carlo: *See—*
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, 4,118,947, Cl. 62-514.00R.
Mitchell, David S.; and Nagel, Robert H., to IDR, Inc. Multiple channel CATV system utilizing row grabber interface as CATV input. 4,120,003, Cl. 358-142.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.
Mitsubishi Paper Mills, Ltd.: *See—*
Iguchi, Shigeru; Iwata, Tamotu; and Yano, Tetsuo, 4,119,463, Cl. 96-67.000.
Mitsubishi Seiko Kabushiki Kaisha: *See—*
Abe, Yoshihiko; Okabe, Isao; and Shirota, Atsushi, 4,119,443, Cl. 148-12.100.
Mitsuda, Tadao; Yasuda, Takeru; and Okuda, Sigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Switch device for detecting a position of a throttle valve of an internal combustion engine. 4,118,976, Cl. 73-118.000.
Mitsui Mining & Smelting Co., Ltd.: *See—*
Saitoh, Kozo; and Izumi, Sumio, 4,119,533, Cl. 209-155.000.
Mitsui-Nisso Corporation: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, to Nippon Telegraph and Telephone Public Corp.; Hitachi, Ltd.; and Fujitsu Limited. Air bearing head support. 4,120,010, Cl. 360-103.000.
Mittag, Douglas C., to Aurora Equipment Company. Crossover or bridge. 4,118,816, Cl. 14-69.500.
Miutel, Alexander: *See—*
Filip, Stanislaw Franz; and Miutel, Alexander, 4,119,583, Cl. 521-103.000.
Miyamori, Katsuya; Murai, Toru; and Shitamori, Osamu, to Miyamori, Katsuya. Subaqueous heater apparatus. 4,119,082, Cl. 126-263.000.
Miyaoka, Senri, to Sony Corporation. Cathode ray tube. 4,119,883, Cl. 313-414.000.
Miyashita, Kasumi: *See—*
Nakao, Yukihiro; Miyashita, Kasumi; and Toda, Jun, 4,119,435, Cl. 127-34.000.
Miyashita, Tsune: *See—*
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.
Miyauchi, Katsuki: *See—*
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.
Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. System for transporting cheeses produced by spinning machinery. 4,118,920, Cl. 57-34.00R.
Miyoshi, Noriomi; and Tsuruoka, Michihiko, to Fuji Electric Co., Ltd. Mechanism for converting rotary motion into linear reciprocating motion. 4,118,993, Cl. 74-37.000.
Mizuma, Katsuhisa; and Awazu, Tetsuro, to Neturen Company Ltd. Helical reinforcing bar for steel cage in concrete structure. 4,119,764, Cl. 428-592.000.
Mobil Oil Corporation: *See—*
Braid, Milton, 4,119,548, Cl. 252-42.700.
Heiba, El Ahmadi I.; and Dessau, Ralph M., 4,119,646, Cl. 260-346.220.
Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, to Ricoh Co., Ltd. Toner charging apparatus. 4,119,060, Cl. 118-653.000.
Modern Album and Finishing Co., Inc.: *See—*
Froehlig, Rudolph A., 4,119,198, Cl. 206-312.000.
Moellgaard, Klaus; and Sendtko, Ulrich, to Dr. Ing. Rudolf Hell, GmbH. Apparatus and method for stepwise scanning of patterns according to a scanning raster. 4,120,045, Cl. 364-900.000.
Moena, Nibaldo Mosciatti. Miniature soccer-football game toy. 4,119,314, Cl. 273-85.00F.
Mohawk Data Sciences Corp.: *See—*
Yeschick, Waldemar, 4,119,953, Cl. 340-324.0AD.
Molleken, Reiner: *See—*
Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, 4,119,671, Cl. 260-600.00R.
Mollenkopf, Lloyd C., to Rosemount Office Systems, Inc. Supports for movable partitions. 4,119,287, Cl. 248-243.000.
Monroe Auto Equipment Company: *See—*
Hoebrechts, Albert J. G.; and van Eekelen, Alex H. A. M., 4,118,825, Cl. 15-250.320.
Monsan, Pierre: *See—*
Durand, Gilbert; and Monsan, Pierre, 4,119,494, Cl. 195-68.000.
Monsanto Company: *See—*
Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,119,762, Cl. 428-524.000.
Bloomfield, Jordan J.; and Owsley, Dennis C., 4,119,575, Cl. 252-522.000.
Gaertner, Van R.; and Hamm, Philip C., 4,119,430, Cl. 71-86.000.
King, Henry L.; and Wu, Chester C., 4,119,614, Cl. 528-283.000.
Knowles, William S.; and Sabacky, Milton J., 4,119,652, Cl. 260-429.00R.
Sullivan, Alfred Bay, 4,119,780, Cl. 548-329.000.
Veazey, Thomas M., 4,119,747, Cl. 427-424.000.
Monti, Roland: *See—*
Mehl, Wolfgang; and Monti, Roland, 4,119,374, Cl. 355-32.000.
Moody, David. Vehicle of adjustable width. 4,119,224, Cl. 214-85.000.
Mookherjee, Braja Dulal: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Moore, Donald K.; Beaman, George R.; Hightower, John D.; and Graham, Craig W., Jr., to United States of America, Navy. Acoustic coupler. 4,119,941, Cl. 340-5.00R.
Moore, Joseph E., to Chevron Research Company. Method for control of fungi using 4-halo-5-aryl-1,2,3,-dithiazoles. 4,119,722, Cl. 424-270.000.
Moore, Warren F., to General Electric Company. Method of forming a superalloy. 4,119,458, Cl. 75-170.000.
Morane, Bruno, to L'Oreal. Hair dryer, especially for long hair. 4,118,874, Cl. 34-101.000.
Morgan, Mitchell L.: *See—*
Naves, David G.; Aquino, Herman A.; and Morgan, Mitchell L., 4,119,043, Cl. 105-368.00R.
Morgan, Robert Anthony, to Terminal Data Corporation. Microfiche inspection apparatus. 4,119,372, Cl. 353-26.00R.
Mori, Kaoru: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.
Mori, Kojiro: *See—*
Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, 4,119,617, Cl. 528-360.000.
Moricca, Anthony C.: *See—*
Moricca, Larry S.; and Utasi, Joseph G., 4,119,811, Cl. 340-407.000.
Moricca, Larry S.; and Utasi, Joseph G., to Moricca, Anthony C. Photo-vibratory transducer. 4,119,811, Cl. 340-407.000.
Moritomo, Sadao; Tatsumi, Youji; and Sugita, Terumitsu, to Seiko Seiki Kabushiki Kaisha. Method for controlling grinding process. 4,118,900, Cl. 51-281.00R.
Morken, John Edward. Drapery pleat holder. 4,119,134, Cl. 160-349.00R.
Moroco, Philip A.; and Brow, Gaylord T. Object supports. 4,119,302, Cl. 256-48.000.
Morokawa, Shigeru; and Hashimoto, Yukio, to Citizen Watch Co. Ltd. Frequency division circuit. 4,119,867, Cl. 307-225.00C.
Morris, James C.: *See—*
Newell, P. Bruce; and Morris, James C., 4,119,888, Cl. 315-205.000.
Morrison, Howard J.; Fletchic, Donald K.; and Baer, Ralph H., to Marvin Glass & Associates. Phonograph cartridge and sensor assembly. 4,119,844, Cl. 250-231.00R.
Morton, Douglas Ross, Jr., to Upjohn Company, The. Inter-oxa-9-deoxy-9,10-didehydro-PGD$_1$ compounds. 4,119,672, Cl. 562-503.000.
Morton, John; and Stevens, Keith Drummond, to Cableform Limited. Pulse controllers. 4,119,898, Cl. 318-341.000.
Moser, Kurt; Wegmann, Helmut; and Weigele, Reinhold, to Develop KG Dr. Eisbein & Co. Mounting arrangement for component elements of a copying machine. 4,119,059, Cl. 118-644.000.
Moser, Richard A., to Helm Instrument Company. Auto zero circuit. 4,119,918, Cl. 328-165.000.
Moses, Lucius, to Heyward, Viola M. Gas stove attachment. 4,119,021, Cl. 99-425.000.
Moshofsky, Jerome F.: *See—*
Harris, Richard D.; Smith, Franklin G.; and Moshofsky, Jerome F., 4,118,835, Cl. 24-73.0MC.
Mossberg Hubbard a Division of Wanskuck Company: *See—*
Hosbein, Hugh W., 4,119,279, Cl. 242-54.00R.
Motokawa, Yutaka, to Kakogawa Plastics Kabushiki Kaisha. Heat-controlled doctor knife. 4,119,836, Cl. 219-528.000.
Motorola Inc.: *See—*
Bevacqua, Louis Albert, 4,118,991, Cl. 74-10.330.
Bouvier, David William; Brenner, Charles H.; and Butler, Walker, 4,119,966, Cl. 343-7.700.
Mastroianni, Sal Thomas, 4,119,446, Cl. 148-1.500.
McGuire, Charles H., 4,119,819, Cl. 200-81.90R.
Metteer, N. Bruce; and Quick, John D., 4,119,927, Cl. 331-11.000.
Motosugi, Katuhiko: *See—*
Noguchi, Masaaki; Tanaka, Yukiyasu; and Motosugi, Katuhiko, 4,119,065, Cl. 123-32.0SP.
Mower, Michael Lee; Carleton, William Arthur; and Packard, Gary Richard, to Facet Enterprises, Inc. Automotive fan drive assembly. 4,119,184, Cl. 192-82.00T.
Moy, Thomas P.: *See—*
Isgur, Irving E.; Alexander, Robert R.; and Moy, Thomas P., 4,119,602, Cl. 260-29.6NR.
Moyer, Ernest P., to American Chain & Cable Company, Inc. Movable storage unit system. 4,119,376, Cl. 312-198.000.

Moyroud, Louis M. Photographic type composing machine. 4,119,977, Cl. 354-7.000.

Muacevic, Gojko: *See—*
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,119,728, Cl. 424-324.000.

Muccino, Richard Robert: *See—*
Liebman, Arnold Alvin; and Muccino, Richard Robert, 4,119,647, Cl. 260-397.200.

Mugitani, Yasuhiro: *See—*
Tuda, Goro; Sawada, Yoshihisa; and Mugitani, Yasuhiro, 4,119,015, Cl. 90-17.000.

Muka, Edward; and Glover, Clyde Pershing, to Eastman Kodak Company. Incubator and radiometric scanner. 4,119,381, Cl. 356-244.000.

Muller, Jean-Claude, to Rellumit-Inter. Counter-current automatic cleaning filter. 4,119,540, Cl. 210-142.000.

Muller, Rolf, to Papst-Motoren KG. Brushless d.c. motor with precise speed control. 4,119,895, Cl. 318-254.000.

Munk, Michael: *See—*
Boochever, Evelyn; and Munk, Michael, 4,118,945, Cl. 62-176.00C.

Murai, Toru: *See—*
Miyamori, Katsuya; Murai, Toru; and Shitamori, Osamu, 4,119,082, Cl. 126-263.000.

Murao, Mikio: *See—*
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.

Muroga, Hisashi: *See—*
Noguchi, Ichiro; Hayashi, Chiaki; and Muroga, Hisashi, 4,119,875, Cl. 310-248.000.

Murphy, Walter Thomas, to B. F. Goodrich Company, The. Rubbery bladders from epoxy compositions. 4,119,592, Cl. 260-18.0PF.

Murray, Paul Michael, to Redifon Flight Simulation Limited. Raster-scan display apparatus for computer-generated images. 4,119,956, Cl. 340-324.0AD.

Myers, Timothy: *See—*
Snyder, J. Rush; and Myers, Timothy, 4,119,277, Cl. 241-167.000.

Myodo, Osamu: *See—*
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.

N. Civy & Cie, SA: *See—*
Lowenheck, Konrad, 4,118,978, Cl. 73-144.000.

N. V. Bekaert S.A.: *See—*
Verbauwhede, Germain; and Coopman, Frans, 4,119,748, Cl. 428-36.000.

Nabisco, Inc.: *See—*
Spiel, Albert, 4,119,734, Cl. 426-72.000.

Nabiullin, Faat Khatovich; Gertsik, Efim Mikhailovich; Rodionov, Jury Timofeevich; and Rabinovich, Vyacheslav Anatolievich. Device for introducing fillers and terminal into galvanic cell. 4,119,126, Cl. 141-100.000.

Nachtman, Elliot S.; and Hitchcock, Ronald G., to Tower Oil & Technology Co. High temperature lubricant composition. 4,119,547, Cl. 252-25.000.

Nafissi, Ahmad: *See—*
Zimmer, Erich; Nafissi, Ahmad; and Winkhaus, Gunther, 4,119,698, Cl. 423-82.000.

Nagai, Hisomu: *See—*
Aoki, Yutaka; Hase, Akira; Ito, Jiro; and Nagai, Hisomu, 4,119,409, Cl. 44-1.00R.

Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, to Sony Corporation. Random access recording and/or playback system. 4,120,006, Cl. 360-72.000.

Nagaoka, Koji: *See—*
Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, 4,119,761, Cl. 428-472.000.

Nagatsu, Toshiharu; and Sakakibara, Shumpei, to Ajinomoto Co., Inc. Novel dipeptide derivatives, salts thereof, and method of measuring enzyme activity. 4,119,620, Cl. 260-112.50R.

Nagel, Robert H.: *See—*
Mitchell, David S.; and Nagel, Robert H., 4,120,003, Cl. 358-142.000.

Nagel, Robert I., to Dominion Auto Accessories Limited. Stop, tail and signal lamp. 4,120,018, Cl. 362-333.000.

Nagumo, Michihiko; Inoue, Tohru; and Okumura, Naoki, to Nippon Steel Corporation. Process for manufacturing a steel product. 4,119,442, Cl. 148-2.000.

Nahay, Lawrence Paul, to RCA Corporation. Digital time division multiplex switching system. 4,119,807, Cl. 179-18.0BC.

Nakada, Akira: *See—*
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.

Nakagawa, Tadashi: *See—*
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.

Nakahara, Muneo: *See—*
Komorita, Fujio; and Nakahara, Muneo, 4,119,471, Cl. 106-47.00Q.

Nakai, Masanori: *See—*
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.

Nakajima, Seiji: *See—*
Sato, Mituharu; and Nakajima, Seiji, 4,119,213, Cl. 214-1.0BB.

Nakamura, Junichi: *See—*
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.

Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, to Sekisui Kagaku Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Hayashi Zoen. Connectable nursery box structures having compartmentalizing grids. 4,118,892, Cl. 47-66.000.

Nakao, Yukihiro; Miyashita, Kasumi; and Toda, Jun, to Takeda Chemical Industries, Ltd. Process of preparing soybean polysaccharides. 4,119,435, Cl. 127-34.000.

Narita, Kinichiro: *See—*
Kagami, Akiyasu; Hase, Takashi; Mimura, Yoshiyuki; Narita, Kinichiro; and Hiraki, Minoru, 4,119,562, Cl. 252-301.60S.

National Blank Book Company, Inc.: *See—*
Cassidy, Raymond T.; and St. Amand, Robert, 4,119,200, Cl. 206-387.000.

National Can Corporation: *See—*
Hinds, James J., 4,119,843, Cl. 250-222.0PC.

National Distillers and Chemical Corporation: *See—*
Bartsch, Raymond C., 4,119,567, Cl. 252-430.000.
Braus, Harry; and Woltermann, Jay R., 4,119,789, Cl. 560-161.000.
Speca, Anthony N., 4,119,773, Cl. 526-130.000.

National Research Development Corporation: *See—*
Hartnagel, Hans Ludwig; and Bayraktaroglu, Burhan, 4,119,993, Cl. 357-23.000.
Taylor, Wilfred Kenelm, 4,119,946, Cl. 340-146.30Q.

National Semiconductor Corporation: *See—*
Varadi, Andrew G., 4,120,047, Cl. 365-227.000.

National Starch & Chemical Corporation: *See—*
Tessler, Martin M., 4,119,487, Cl. 162-175.000.

National Steel Corporation: *See—*
Costakis, Andrew L., 4,119,515, Cl. 204-211.000.

National Union Electric Corporation: *See—*
Smaling, Oral M., 4,119,414, Cl. 55-97.000.

Nava, Giorgio Furtunato, to Vega S.p.A. Bending unit for a bending-glueing machine. 4,119,018, Cl. 93-49.0AC.

Naves, David G.; Aquino, Herman A.; and Mish, Robert J., to Pullman Incorporated. Railway car counterbalanced tilting deck. 4,119,042, Cl. 105-368.00R.

Naves, David G.; Aquino, Herman A.; and Morgan, Mitchell L., to Pullman Incorporated. Railway car counterbalanced tilting deck. 4,119,043, Cl. 105-368.00R.

NCR Corporation: *See—*
Farber, Sheldon, 4,119,776, Cl. 542-441.000.

Neasham, Leo B. Drive unit for selectively effecting driving or free-wheeling condition of propeller shafting. 4,118,951, Cl. 64-4.000.

Nedbal, Richard A.: *See—*
Estes, Bay E., III; and Nedbal, Richard A., 4,119,896, Cl. 318-266.000.

Nef, Jean-Marie: *See—*
Legendre, Philippe; and Nef, Jean-Marie, 4,119,923, Cl. 330-284.000.

Neiman S.A.: *See—*
Lipschutz, Paul, 4,118,960, Cl. 70-59.000.

Nelson, Kerry S.: *See—*
Frishman, Leslie O.; and Nelson, Kerry S., 4,119,373, Cl. 355-3.00R.

Nelson, Kyler Fischer, to Xerox Corporation. Fast acting gain photocurrent device. 4,119,840, Cl. 250-211.00R.

Nelson, Walter R. Laminar stream spout attachment. 4,119,276, Cl. 239-590.300.

Nemoto, Ichiro: *See—*
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.

Nemoto, Shigeru: *See—*
Kobayashi, Minoru; and Nemoto, Shigeru, 4,119,822, Cl. 200-246.000.

Neturen Company Ltd.: *See—*
Mizuma, Katsuhisa; and Awazu, Tetsuro, 4,119,764, Cl. 428-592.000.

Neuzil, Richard W.; and Fergin, Richard L., to UOP Inc. Desorbent for separation of butene-1 from a C4 hydrocarbon mixture using zeolite X. 4,119,678, Cl. 260-677.00A.

Neville, Glenn E.: *See—*
Wilkins, Paul E.; Neville, Glenn E.; and Fitzgerald, Robert T., 4,119,039, Cl. 102-214.000.

Newell, Harold R., to Mesur-Matic Electronics Corp. Acceleration/deceleration control circuit for a stepping motor. 4,119,902, Cl. 318-696.000.

Newell, P. Bruce; and Morris, James C., to GTE Sylvania Incorporated. Operating circuit for flash lamp directly coupled to AC source. 4,119,888, Cl. 315-205.000.

Newport, John J., III; and Messick, Bobby G., to Dow Chemical Company, The. Method of promoting the crystallization of picloram. 4,119,632, Cl. 260-295.00R.

Newquist, Barbara Lee; and Newquist, Scott C. Garment-supportable tennis ball pocket. 4,119,247, Cl. 224-5.00D.

Newquist, Scott C.: *See—*
Newquist, Barbara Lee; and Newquist, Scott C., 4,119,247, Cl. 224-5.00D.

Nibu, Toshiharu: *See—*
Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, 4,119,542, Cl. 210-360.00A.

Nicholas, Paul Peter: *See*—
Kroenke, William Joseph; and Nicholas, Paul Peter, 4,119,570, Cl. 252-466.00J.
Nichols, A. G., Jr.: *See*—
Jenkins, John W.; and Nichols, A. G., Jr., 4,119,311, Cl. 272-65.000.
Nichols, Andrew J., III, to Intel Corporation. Circuit for display, such as video game display. 4,119,955, Cl. 340-324.0AD.
Nidola, Antonio: *See*—
Spaziante, Placido Maria; and Nidola, Antonio, 4,119,503, Cl. 204-59.00R.
Niederberger, Felix: *See*—
Turi Nagy, Janos; and Niederberger, Felix, 4,119,912, Cl. 325-58.000.
Nierat, Jeanine: *See*—
Buendia, Jean; Nierat, Jeanine; and Deroy, Robert, 4,119,727, Cl. 424-275.000.
Nihon Denshi Kabushiki Kaisha: *See*—
Tanaka, Kazumitsu; and Goto, Nobuo, 4,119,854, Cl. 250-397.000.
Nihon Oil and Fats Co., Ltd.: *See*—
Komai, Takeshi; and Matsuyama, Kazuo, 4,119,657, Cl. 260-453.0RZ.
Nikonets, Leonid Alexeevich: *See*—
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.
Nilsson, Erland; and Lundbohm, Lennart, to Nyby Bruk AB. Cover means for protecting tubes conveying hot mediums. 4,119,751, Cl. 428-131.000.
Nilsson, Nils Arne: *See*—
Hernestam, Sven Erik Harry; Nilsson, Nils Arne; Nordvi, Curt Harry; and Willard, Lars-Olof, 4,119,711, Cl. 424-54.000.
Ninomiya, Takeshi, to Sony Corporation. Video time base corrector. 4,120,000, Cl. 358-8.000.
Nippon Electric Co., Ltd.: *See*—
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, 4,119,536, Cl. 210-50.000.
Sugawara, Mitsutoshi, 4,119,919, Cl. 329-103.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.
Nippon Kogaku K.K.: *See*—
Gonda, Tsunemi, 4,119,906, Cl. 323-22.00T.
Nippon Oil Company, Ltd.: *See*—
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,119,492, Cl. 195-28.0VB.
Nippon Shokubai Kagaku Kogyo Co., Ltd: *See*—
Tsuchiya, Michio, 4,119,670, Cl. 260-585.00C.
Nippon Steel Corporation: *See*—
Nagumo, Michihiko; Inoue, Tohru; and Okumura, Naoki, 4,119,442, Cl. 148-2.000.
Nippon Telegraph and Telephone Public Corp.: *See*—
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.
Nippon Unicar Company, Limited: *See*—
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Nippon Zeon Co. Ltd.: *See*—
Okuda, Takao; and Wada, Akira, 4,119,596, Cl. 260-21.000.
Nishi, Yoshio: *See*—
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.
Nishi, Yusaku; and Fujii, Hideo, to Tokyo Shibaura Electric Co., Ltd. Method of manufacturing thick-film circuit devices. 4,119,480, Cl. 156-272.000.
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, to Japan Gasoline Company, Ltd. Solid supported catalysts for catalytic reduction of nitrogen oxides in waste gases. 4,119,568, Cl. 252-437.000.
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, to Japan Gasoline Company, Ltd. Process for removal of nitrogen oxides from waste gas. 4,119,703, Cl. 423-239.000.
Nishizawa, Hiroshi; Tanaka, Shigeyoshi; and Fujishima, Minoru, to Hitachi Chemical Company, Ltd. Powder coating composition. 4,119,679, Cl. 260-835.000.
Nissan Motor Company, Ltd.: *See*—
Asano, Masaharu, 4,119,070, Cl. 123-119.0EC.
Asano, Masaharu, 4,119,072, Cl. 123-119.0EC.
Fujii, Toshihiko, 4,119,451, Cl. 156-211.000.
Hayashi, Kazuo; and Kamijo, Ken, 4,119,415, Cl. 55-124.000.
Hayashi, Kazuo; and Kamijo, Ken, 4,119,416, Cl. 55-136.000.
Kondo, Iori, 4,119,344, Cl. 297-385.000.
Masaki, Kenji; and Aono, Shigeo, 4,119,074, Cl. 123-124.00B.
Matsuki, Masamitsu, 4,119,794, Cl. 174-68.00R.
Yanagishima, Takayuki; and Inoue, Naohiko, 4,119,172, Cl. 180-141.000.
Nissen, Reinhard: *See*—
Kellerwessel, Hans; Kausel, Ernst; and Nissen, Reinhard, 4,119,699, Cl. 423-109.000.
Nissho-Iwai Co., Ltd.: *See*—
Aoki, Yutaka; Hase, Akira; Ito, Jiro; and Nagai, Hisomu, 4,119,409, Cl. 44-1.00R.
Nittetu Chemical Engineering Ltd.: *See*—
Yamauchi, Tadashi; Akune, Mikio; and Kouchi, Susumo, 4,119,538, Cl. 210-67.000.
Nitto Boseki Co., Ltd.: *See*—
Shono, Hiroaki; Noji, Toshio; Ishikawa, Shinzo; and Wakasa, Isao, 4,119,420, Cl. 65-1.000.
Nobbe, Paul J. Method and mold for producing concrete slotted floor. 4,119,691, Cl. 264-71.000.
Noda, Isao: *See*—
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Noguchi, Ichiro; Hayashi, Chiaki; and Muroga, Hisashi, to Gakken Co., Ltd. Kabushiki Kaisha Gakushu Kenkyusha. Direct current electric motor. 4,119,875, Cl. 310-248.000.
Noguchi, Masaaki; Tanaka, Yukiyasu; and Motosugi, Katuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine having an auxiliary combustion chamber and a method of control of combustion in said internal combustion engine. 4,119,065, Cl. 123-32.0SP.
Noji, Toshio: *See*—
Shono, Hiroaki; Noji, Toshio; Ishikawa, Shinzo; and Wakasa, Isao, 4,119,420, Cl. 65-1.000.
Noll, Klaus-Reinhold: *See*—
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.
Nomura, Masahiro: *See*—
Hayakawa, Masao; and Nomura, Masahiro, 4,120,041, Cl. 364-712.000.
Nomura, Takao: *See*—
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Nomura, Yuichi: *See*—
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Nonaka, Chiaki: *See*—
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,120,019, Cl. 361-385.000.
Nonnenmacher, Gerhard; Robeller, Walter; and Veil, Karl, to Robert Bosch GmbH. Control arrangement for a hydrostatic drive. 4,118,931, Cl. 60-444.000.
Nordvi, Curt Harry: *See*—
Hernestam, Sven Erik Harry; Nilsson, Nils Arne; Nordvi, Curt Harry; and Willard, Lars-Olof, 4,119,711, Cl. 424-54.000.
Norris, Alan H.; and Chambley, Phillip W., to Champion International Corporation. Weave-de-weave process. 4,118,842, Cl. 28-218.000.
Norris, Alan Hedley: *See*—
Chambley, Phillip Wayne; and Norris, Alan Hedley, 4,119,826, Cl. 219-10.810.
Noschese, Rocco James, to Burndy Corporation. Interconnecting module. 4,119,818, Cl. 200-50.0AA.
Nothen, Karl: *See*—
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.
Nowak, Edward Norbert: *See*—
Hollingshead, William Shepherd; and Nowak, Edward Norbert, 4,119,791, Cl. 568-768.000.
Nozaki, Hiromi; and Hara, Haruo, to Konishiroku Photo Industry Co., Ltd. Method and apparatus for measuring erythrocyte sedimentation rate. 4,118,974, Cl. 73-61.400.
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich. Cement and process for producing same. 4,119,467, Cl. 106-100.000.
Nusbaumer, Kay T.; and Boyer, Peter W., to PHD, Inc. Non-rotatable fluid power cylinder. 4,119,017, Cl. 92-108.000.
Nyby Bruk AB: *See*—
Nilsson, Erland; and Lundbohm, Lennart, 4,119,751, Cl. 428-131.000.
Nyswander, Reuben E.; and Roquemore, Cass R. Sequentially triggering two or more hydrogen thyratrons with precision timing. 4,119,917, Cl. 328-67.000.
Oakley, John; and Ruffell, Derrick, to Schlegel (UK) Limited. Three-part seal construction. 4,119,325, Cl. 277-207.00R.
Oberlin, Max E.: *See*—
Audesse, Emery G.; Griffin, Robert M.; and Oberlin, Max E., 4,119,832, Cl. 219-270.000.
Oberlinner, Andreas: *See*—
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Obermaier, Hans: *See*—
Thome, Roland; Bings, Hubert; and Obermaier, Hans, 4,119,707, Cl. 423-592.000.
Oberste-Beulmann, Klaus: *See*—
Sander, Rolf; and Oberste-Beulmann, Klaus, 4,119,350, Cl. 299-87.000.
O'Brien, Edward F.: *See*—
Putnam, Roger L., Jr.; and O'Brien, Edward F., 4,118,913, Cl. 53-551.000.
Ocampo, Felipe; Meza, Francisco; and Aguirre, Francisco, to Instituto

Mexicano del Petroleo. Process for the purification of acetonitrile. 4,119,497, Cl. 203-29.000.
Occidental Oil Shale, Inc.: *See*—
Bartel, William J.; Burton, Robert S., III; and Cha, Chang Yul, 4,119,345, Cl. 299-2.000.
O'Farrell, Charles P.; and Serniuk, George E., to Exxon Research & Engineering Co. Process for sulfonating unsaturated elastomers using acyl sulfates. 4,119,616, Cl. 526-31.000.
Off, Joseph W. A.; and Early, Judson Horace, to Haggar Company. Apparatus for crimping belt loops. 4,119,246, Cl. 223-52.000.
Ogawa, Iwakichi, to Takara Co., Ltd. Articulated magnetic doll. 4,118,888, Cl. 46-22.000.
Ogden, Cameron S.: *See*—
Fedor, Robert J.; and Ogden, Cameron S., 4,119,701, Cl. 423-213.200.
Oguchi, Shigemitsu: *See*—
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.
Ohlund, Ingvar; and Robertson, Hans, to Saab-Scania Aktiebolag. Target raising device with curved supporting runners. 4,119,317, Cl. 273-105.600.
Ohmori, Muneki: *See*—
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.
Ohno, Masayoshi: *See*—
Heki, Hideaki; Ozaki, Osamu; and Ohno, Masayoshi, 4,119,417, Cl. 55-158.000.
Ohnuma, Teruyuki: *See*—
Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, 4,119,060, Cl. 118-653.000.
Ohsato, Katuaki: *See*—
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
Ohya, Akiyoshi: *See*—
Kondo, Michio; Nakada, Akira; Chibana, Masanobu; Futamase, Tsuyoshi; and Ohya, Akiyoshi, 4,119,005, Cl. 84-1.010.
Oishi, Kengo, to Fuji Photo Film Co., Ltd. Magnetic tape magazine. 4,119,282, Cl. 242-199.000.
Okabe, Isao: *See*—
Abe, Yoshihiko; Okabe, Isao; and Shirota, Atsushi, 4,119,443, Cl. 148-12.100.
Okada, Kiyomichi: *See*—
Watanabe, Tomoyoshi; Yasui, Tsuneo; Ishikawa, Shigeo; and Okada, Kiyomichi, 4,119,385, Cl. 400-215.300.
Oki Electric Industry Co., Ltd.: *See*—
Watanabe, Akinori; and Shinozuka, Katsumasa, 4,119,383, Cl. 400-124.000.
Okuda, Hiroji, to Koyo Seiko Company Limited. Apparatus for releasing drive assembly from roll neck and connecting same thereto. 4,118,967, Cl. 72-239.000.
Okuda, Koya: *See*—
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.
Okuda, Sigeru: *See*—
Mitsuda, Tadao; Yasuda, Takeru; and Okuda, Sigeru, 4,118,976, Cl. 73-118.000.
Okuda, Takao; and Wada, Akira, to Nippon Zeon Co. Ltd. Thermosetting coating compositions. 4,119,596, Cl. 260-21.000.
Okumura, Naoki: *See*—
Nagumo, Michihiko; Inoue, Tohru; and Okumura, Naoki, 4,119,442, Cl. 148-2.000.
Olin Corporation: *See*—
Owens, William F., Jr., 4,119,105, Cl. 131-10.300.
Olinger, Keith D.: *See*—
Heyen, Wilfred L.; and Olinger, Keith D., 4,119,083, Cl. 126-270.000.
Olinkraft, Inc.: *See*—
Cuthbertson, Jim P.; Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 4,119,263, Cl. 229-17.00B.
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Combette, Marc; and Ollivier, Jean, 4,119,257, Cl. 227-10.000.
Olschewski, Armin: *See*—
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,119,187, Cl. 192-98.000.
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., to Foxboro Company, The. Electric signal transmitter for vibrating-wire sensor. 4,118,977, Cl. 73-141.00R.
Olson, Frank A.: *See*—
Johnson, Gilbert R.; and Olson, Frank A., 4,119,967, Cl. 343-100.0PE.
Olson, William J.: *See*—
Trevaskis, William T.; and Olson, William J., 4,119,062, Cl. 123-25.00R.
Olympia Werke AG: *See*—
Keiter, Alfred, 4,119,384, Cl. 400-144.200.
Olympus Optical Company Ltd.: *See*—
Iwasawa, Teruo, 4,120,009, Cl. 360-71.000.
Kobayashi, Minoru; and Nemoto, Shigeru, 4,119,822, Cl. 200-246.000.
Sato, Masaaki, 4,120,037, Cl. 364-705.000.
Sato, Masanobu, 4,119,813, Cl. 179-100.110.
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Omark Industries, Inc.: *See*—
Lanz, Donald D.; and Hencye, Ronald E., 4,118,995, Cl. 74-245.00S.
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, to Gruppo Lepetit S.p.A. Substituted 1,2,4-triazole derivatives. 4,119,635, Cl. 260-308.00R.
Omron Tateisi Electronics Co.: *See*—
Matsueda, Kenichi; and Kitamura, Takao, 4,119,823, Cl. 200-302.000.
Onda, Eiichi: *See*—
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.
Ondis, Albert W.; Pizzuti, Everett V.; and Martha, Eugene F., to Atlan-Tol Industries, Inc. Recording device. 4,119,974, Cl. 346-145.000.
Ono Seiko Co., Ltd.: *See*—
Yamagishi, Hiroaki, 4,118,992, Cl. 74-10.330.
Orbitran Company, Inc.: *See*—
Price, Robert John; and Kamm, Lawrence Joseph, 4,119,161, Cl. 177-3.000.
Orndorff, James Allen, Jr., to Chicago Bridge & Iron Company. Rigid mooring arm quick disconnect. 4,119,051, Cl. 114-249.000.
Oronzio de Nora Impianti Elettrochimici S.p.A.: *See*—
Spaziante, Placido Maria; and Nidola, Antonio, 4,119,503, Cl. 204-59.00R.
Orr, William J. Breaker point assembly. 4,119,817, Cl. 200-19.00A.
Osaka Soda Co. Ltd.: *See*—
Yokota, Noriyuki; Tokuda, Shingo; Ito, Yoshiro; and Itaya, Kenji, 4,119,508, Cl. 204-128.000.
Osborn, Clairborn Lee: *See*—
Hodakowski, Leonard Edward; Osborn, Clairborn Lee; and Harris, Edward Bruce, 4,119,640, Cl. 260-340.700.
Osman, Martin S.: *See*—
Mason, Paul B.; and Osman, Martin S., 4,119,990, Cl. 354-317.000.
Osterland, Edmund: *See*—
Beckmann, Uwe L.; and Osterland, Edmund, 4,119,839, Cl. 235-145.00R.
Otis Engineering Corporation: *See*—
Arendt, Henry P.; and Johnston, Russell A., 4,119,147, Cl. 166-155.000.
Jenkins, Charles J., 4,118,954, Cl. 64-23.000.
Taylor, Frank H., 4,119,146, Cl. 166-72.000.
Otten, Hans-Gunter: *See*—
Hugl, Herbert; Otten, Hans-Gunter; Sommer, Richard; and Wolfrum, Gerhard, 4,119,623, Cl. 260-206.000.
Ottenhues, Ludger, to Windmoller & Holscher. Apparatus for applying and withdrawing a pressure cylinder acting on the plate cylinder in an intaglio printing press. 4,119,031, Cl. 101-153.000.
Ou-Yang, David T.: *See*—
Micklus, Michael J.; and Ou-Yang, David T., 4,119,094, Cl. 128-132.00R.
Outboard Marine Corporation: *See*—
Choudhury, Hrishikesh; and Luksch, Heinrich E., 4,119,186, Cl. 192-0.096.
Outhwaite, Stephen; and Majure, James C., to Sangamo Weston, Inc. Non-contacting gage apparatus and method. 4,119,846, Cl. 250-252.000.
Overton, Arthur Wayne, to Stackpole Components Company. Normally closed switch. 4,119,821, Cl. 200-159.00R.
Owatonna Manufacturing Company, Inc.: *See*—
Macht, Jon A.; and Blinne, David L., 4,119,225, Cl. 214-145.00A.
Owen, A. B.; Gifford, Bruce M.; Bahl, Horst H.; and Akins, Lewis F., to Lamons Metal Gasket Company. Gasket forming apparatus. 4,118,850, Cl. 29-243.520.
Owen, Leonard John: *See*—
Collier, John Covell; and Owen, Leonard John, 4,119,124, Cl. 140-93.200.
Owens-Corning Fiberglas Corporation: *See*—
Benson, Gustav E., 4,119,253, Cl. 226-7.000.
Cohen, Eleanor B.; Stassen, William N.; and Wintgens, James C., 4,119,477, Cl. 106-99.000.
Owens-Illinois, Inc.: *See*—
Kupsky, George A., 4,119,378, Cl. 316-19.000.
Uhlig, Albert R., 4,119,235, Cl. 220-71.000.
Owens, William F., Jr., to Olin Corporation. Air flow limiting filter. 4,119,105, Cl. 131-10.300.
Owsley, Dennis C.: *See*—
Bloomfield, Jordan J.; and Owsley, Dennis C., 4,119,575, Cl. 252-522.000.
Oyama, Hajime: *See*—
Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, 4,119,060, Cl. 118-653.000.
Ozaki, Osamu: *See*—
Heki, Hideaki; Ozaki, Osamu; and Ohno, Masayoshi, 4,119,417, Cl. 55-158.000.
P.F.W. Beheer B.V.: *See*—
van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.
Package Machinery Company: *See*—
Groom, James S., 4,119,304, Cl. 366-189.000.
Putnam, Roger L., Jr.; and O'Brien, Edward F., 4,118,913, Cl. 53-551.000.

Packard, Gary Richard: *See*—
Mower, Michael Lee; Carleton, William Arthur; and Packard, Gary Richard, 4,119,184, Cl. 192-82.00T.

Paitula, Hannu Olli; and Larsson, Roland Axel, to Granges Essem Aktiebolag. Spindle, particularly for winding up a strap in a safety belt for vehicles. 4,119,281, Cl. 242-107.000.

Palitex Project Company GmbH: *See*—
Marbacher, Lothar, 4,118,919, Cl. 57-34.00R.

Palmisano, Rocco Richard, to United States of America, Army. Removable encapsulant for protection of electronic equipment. 4,118,861, Cl. 29-631.000.

Pandapas, George, Jr. Musical information apparatus providing visual and audible output. 4,119,011, Cl. 84-470.00R.

Pane, Angelo: *See*—
Block, Mitchell L.; and Pane, Angelo, 4,118,962, Cl. 70-455.000.

Pangburn, William H. Child separating and support device. 4,118,812, Cl. 5-92.000.

Papa, Anthony Joseph; Rollins, Richard Lee; and Critchfield, Frank Edward, to Union Carbide Corporation. Phenolic foam modified with phosphorus-containing isocyanate-terminated prepolymers. 4,119,584, Cl. 521-127.000.

Papst-Motoren KG: *See*—
Muller, Rolf, 4,119,895, Cl. 318-254.000.

Parcor: *See*—
Maffrand, Jean-Pierre; and Pereillo, Jean-Marie, 4,119,719, Cl. 424-250.000.

Parfenov, Boris Vladimirovich: *See*—
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Park, Moon C. Beneficiation method. 4,119,532, Cl. 209-17.000.

Parkell Products, Inc.: *See*—
Ross, Robert G.; and McCracken, Mark M., 4,118,866, Cl. 32-22.000.

Parker Manufacturing Company: *See*—
Ewig, John F., Jr., 4,119,258, Cl. 227-132.000.

Parker Sweeper Company: *See*—
Kaeser, Arthur L., 4,118,826, Cl. 15-328.000.

Parmigiano, Nicholas Joseph: *See*—
Passaro, Anthony; and Parmigiano, Nicholas Joseph, 4,119,419, Cl. 55-212.000.

Parshin, Nikolai Igorevich: *See*—
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.

Partridge, Anthony John, to Chichester Partridge Limited. Tie for use in bone fracture surgery. 4,119,091, Cl. 128-92.00B.

Paschakarnis, Peter; Hengst, Bernd; and Wychnanek, Rainer, to Sachs-Systemtechnik GmbH. Water supply system. 4,119,520, Cl. 204-276.000.

Passaro, Anthony; and Parmigiano, Nicholas Joseph. Smoke controlling ash tray. 4,119,419, Cl. 55-212.000.

Patel, Bhupendra C., to Kendall Company, The. Catheter. 4,119,099, Cl. 128-349.00R.

Patel, Hiralal V., to Weatherhead Company, The. Crimping diameter adjusting valve. 4,118,970, Cl. 72-402.000.

Patel, Ramesh P., to Walter Kidde & Company, Inc. Automatic machine motion restricting mechanism. 4,119,118, Cl. 137-594.000.

Patterson-Williams Manufacturing Company: *See*—
Trubody, Bert M., 4,119,310, Cl. 272-33.00R.

Payne, Dannie L., to Raymond Lee Organization, Inc., The, a part interest. Rollaway fence. 4,119,301, Cl. 256-41.000.

Peachtree Doors, Inc.: *See*—
Governale, Bernard C., 4,118,895, Cl. 49-503.000.

Pearson, Glenn A. Fire retardant urea-formaldehyde compositions. 4,119,598, Cl. 260-29.40R.

Pech, Walter: *See*—
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, 4,118,986, Cl. 73-351.000.

Peckar, George E., to Chaspec Manufacturing Co., The. Restraining structure for use in containers. 4,119,204, Cl. 206-521.000.

Pekema OY: *See*—
Stolpe, Erik; Honkanen, Arto; and Laiho, Erkki, 4,119,452, Cl. 156-244.190.

Pelz, Willibald: *See*—
Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, 4,119,464, Cl. 96-68.000.

Pelzer-Kirst GmbH and Co.: *See*—
Klug, Gottfried, 4,119,127, Cl. 150-3.000.

Pennsylvania Plastic Products, Inc.: *See*—
Smiley, Kenneth A., 4,119,121, Cl. 138-96.00T.

Pentzien, Fred R., to Kroehler Mfg. Co. Platform rocker structure. 4,119,343, Cl. 297-264.000.

Pepro: *See*—
Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, 4,119,724, Cl. 424-45.000.

Perard Engineering Limited: *See*—
Curtis, Brian Matthew, 4,119,348, Cl. 299-43.000.

Pereillo, Jean-Marie: *See*—
Maffrand, Jean-Pierre; and Pereillo, Jean-Marie, 4,119,719, Cl. 424-250.000.

Perfect, Frederick H., to Reading Alloys, Inc., a part interest. Molybdenum-titanium-zirconium-aluminum master alloys. 4,119,457, Cl. 75-134.00N.

Perkins, Carroll R.; Cable, Jesse F., III; and Link, Joseph. Plastic modular casing for an electronic watch. 4,120,022, Cl. 361-395.000.

Perrin, Jean-Claude. Electronic ignition with angular transcoder. 4,119,069, Cl. 123-117.00D.

Peters, Kenneth; Fewster, Sidney; Wilson, Frank; and Kearney, Kevin David Nicholas, to Chloride Group Limited. Lead acid cells and batteries. 4,119,772, Cl. 429-204.000.

Peters, Kenneth D.; Veinerman, Elliot; and Felch, Donald E., to UOP Inc. Multiple-stage hydrocarbon conversion with gravity-flowing catalyst particles. 4,119,526, Cl. 208-64.000.

Peters, Kenneth D., to UOP Inc. Multiple-stage hydrocarbon conversion with gravity-flowing catalyst particles. 4,119,527, Cl. 208-64.000.

Petersen, Egon Norbert: *See*—
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Peterson, David C., to Upjohn Company, The. 3,7-Inter-m-phenylene-4,5,6-trinor-12,13(E)-didehydro-13,14-dihydro-9-deoxy-PGD$_1$ compounds. 4,119,785, Cl. 560-53.000.

Peterson, David C., to Upjohn Company, The. 3,7-Inter-m-phenylene-4,5,6-trinor-12,13(E)-didehydro-13,14-dihydro-9,10-didehydro-9-deoxy-PGD$_1$ compounds. 4,119,786, Cl. 560-53.000.

Peterson, Merlin J.: *See*—
Hines, Ralph E., 4,119,044, Cl. 108-27.000.

Petrizio, Cesare James, to RCA Corporation. Touch switch circuits. 4,119,864, Cl. 307-116.000.

Pfeil, Christian; and Breidenbach, Hans, to International Harvester Company. Hydraulic control device. 4,119,016, Cl. 91-449.000.

Pfizer Inc.: *See*—
Wernau, William C., 4,119,546, Cl. 252-8.55D.

PHD, Inc.: *See*—
Nusbaumer, Kay T.; and Boyer, Peter W., 4,119,017, Cl. 92-108.000.

Philip Morris, Incorporated: *See*—
Grubbs, Harvey J.; Van Auken, Thomas V.; and Johnson, William R., Jr., 4,119,106, Cl. 131-17.00R.

Phillips Petroleum Company: *See*—
Dietz, Richard E., 4,119,569, Cl. 252-452.000.
Williams, Ralph P., 4,119,510, Cl. 204-159.230.

Phinney, John M., to Falk Corporation, The. Marine propulsion control system with maneuvering brake. 4,119,185, Cl. 192-.094.

Phone Devices Corporation: *See*—
Marin, Allan; and Bradbery, Jack L., 4,119,810, Cl. 179-90.00K.

Phosphor Products Company Limited: *See*—
Smith, Peter John Fennemore, 4,119,745, Cl. 427-66.000.

Pibor S.A.: *See*—
Bourquard, Pierre, 4,118,923, Cl. 58-88.00B.

Pichl, Heinz, to AB Volvo Penta. Trimmable and tiltable outboard motor. 4,119,054, Cl. 115-41.0HT.

Pieper, Gustav Adolf: *See*—
Klaren, Dick Gerrit, 4,119,139, Cl. 165-1.000.

Pieper, Helmut: *See*—
Engelhardt, Gunther; Keck, Johannes; Kruger, Gerd; Noll, Klaus-Reinhold; and Pieper, Helmut, 4,119,710, Cl. 424-282.000.

Piepers, Harry: *See*—
Warringa, Jozef Johannus Maria; and Piepers, Harry, 4,119,921, Cl. 330-49.000.

Pifferi, Giorgio: *See*—
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.

Pillon, Daniel: *See*—
Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, 4,119,724, Cl. 424-45.000.

Pilz, William M., to Container Corporation of America. Apparel hanging receiving element. 4,119,197, Cl. 206-279.000.

Pinnow, Kenneth E.; and Bressanelli, Jerome P., to Crucible Inc. Welded ferritic stainless steel articles. 4,119,765, Cl. 428-683.000.

Pinzone, Anthony J.: *See*—
Pinzone, Joseph A.; Pinzone, Anthony J.; and Gagliano, Stephen J., 4,119,107, Cl. 132-79.00G.

Pinzone, Joseph A.; Pinzone, Anthony J.; and Gagliano, Stephen J. Portable vanity case. 4,119,107, Cl. 132-79.00G.

Pirkle, Sherman Jack, to Hewlett-Packard Company. Defibrillator charging circuit. 4,119,903, Cl. 320-1.000.

Pitney-Bowes, Inc.: *See*—
Carvalko, Joseph R.; and Tolmie, Robert J., Jr., 4,119,989, Cl. 354-298.000.
Freeman, Gerald C.; and Mahoney, James F., 4,119,194, Cl. 198-400.000.

Pittinger, Charles B., Jr.: *See*—
Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr., 4,118,864, Cl. 30-276.000.

Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr. Incremental feed means and method for filament-trimmer filaments. 4,118,864, Cl. 30-276.000.

Pittsburgh Corning Corporation: *See*—
Rostoker, David, 4,119,422, Cl. 65-22.000.

Pizzuti, Everett V.: *See*—
Ondis, Albert W.; Pizzuti, Everett V.; and Martha, Eugene F., 4,119,974, Cl. 346-145.000.

Platzoeder, Karl: *See*—
Haas, Ernst; Platzoeder, Karl; and Schnoeller, Manfred, 4,119,441, Cl. 148-1.500.

Pohjola, Jorma Toivo Tapani. Vehicle and endless track structure therefor. 4,119,356, Cl. 305-35.0EB.

Pohl, Stanley: *See—*
Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, 4,119,399, Cl. 8-10.200.

Poitier, Bernard: *See—*
Duboc, Jean; and Poitier, Bernard, 4,118,836, Cl. 24-73.0SA.

Polaroid Corporation: *See—*
Baker, James G., 4,119,980, Cl. 354-150.000.
Buckler, Sheldon A.; Cohen, Fredric S.; and Kennedy, David P., 4,118,860, Cl. 29-623.500.
Eloranta, Vaito K.; and Ruggles, Benjamin C., Jr., 4,119,369, Cl. 351-49.000.
Holmes, William A., 4,119,370, Cl. 352-130.000.
Land, Edwin H., 4,119,770, Cl. 429-152.000.
Mason, Paul B.; and Osman, Martin S., 4,119,990, Cl. 354-317.000.
Stella, Joseph A., 4,119,371, Cl. 352-130.000.

Poler, Stanley. Intra-ocular lens. 4,118,808, Cl. 3-13.000.

Polgari, Istvan: *See—*
Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, 4,119,633, Cl. 260-307.00F.

Polito, Joseph A. Sewer form. 4,119,291, Cl. 249-11.000.

Pollack, Eric G.: *See—*
Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., 4,119,534, Cl. 209-291.000.

Pollitzer, Ernest L.: *See—*
Hayes, John C.; and Pollitzer, Ernest L., 4,119,529, Cl. 208-139.000.

Polster, Morton A. Disposable hooded garment. 4,118,802, Cl. 2-84.000.

Polysar Limited: *See—*
Fischer, Erhardt; and Richmond, Michael Hugh, 4,119,759, Cl. 428-407.000.
Souwand, Steve Elia, 4,118,982, Cl. 73-194.00R.

Pomerantseva, Maiya Grigorievna: *See—*
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.

Ponticello, Gerald S.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,119,718, Cl. 424-248.510.

Popov, Alexandr Nikolaevich: *See—*
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Popplewell, Frank William; and Houghton, Frank Raymond, to Dunlop Limited. Games racquets. 4,119,313, Cl. 273-73.00K.

Population Research Incorporated: *See—*
Bolduc, Lee R.; and Dickhudt, Eugene A., 4,119,098, Cl. 128-235.000.

Porier, Victor L.; and Bernhard, William F., to Thermo Electron Corporation. Prosthetic blood vessel. 4,118,806, Cl. 3-1.400.

Port-A-Phone, Inc.: *See—*
Girardi, Frank D., 4,119,800, Cl. 179-2.0EA.

Porter, John F. Variable speed bicycle. 4,119,326, Cl. 280-236.000.

Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., to Stearns-Roger Corp. Multiple deck trommel screen. 4,119,534, Cl. 209-291.000.

Porter, William Hunt, to W. H. Porter, Inc. Sandwich panel structure. 4,119,750, Cl. 428-105.000.

Post Office, The: *See—*
Hensel, Paul Christopher, 4,118,862, Cl. 30-124.000.

Postlethwaite, Dennis, to Lever Brothers Company. Bleaching compositions and process for cleaning fabrics. 4,119,557, Cl. 252-99.000.

Poutsma, Marvin Lloyd; Rabo, Jule Anthony; and Risch, Alan Peter, to Union Carbide Corporation. Preparation of hydroxylated compounds from synthesis of gas with palladium catalysts. 4,119,656, Cl. 260-449.00R.

Powell, Roger Andrew. Trough reflector. 4,119,365, Cl. 350-293.000.

Powers, E. Michael: *See—*
Dykes, Dewey B.; Powers, E. Michael; Foster, T. Kenneth; and Rogers, Robert E., 4,119,022, Cl. 99-532.000.

PPG Industries, Inc.: *See—*
Comperatore, John A., 4,119,424, Cl. 65-107.000.
DeAngelis, Willie G.; and Crowe, Edward R., 4,119,428, Cl. 65-287.000.
Hendricks, Charles D., 4,120,016, Cl. 361-228.000.
Kelly, Joseph B., 4,119,426, Cl. 65-111.000.
Lewchuk, Richard R., 4,118,911, Cl. 52-749.000.
Rinehart, Dale W., 4,119,760, Cl. 428-410.000.
Seymour, Samuel L., 4,119,423, Cl. 65-104.000.
Sickles, James E., 4,120,017, Cl. 361-228.000.

Pratelli, Cesare, to Societa Italiana Telecomunicazioni Siemens S.p.A. Line-control unit for telecommunication system. 4,119,805, Cl. 179-18.0FC.

Precision, Inc.: *See—*
Head, Dale R., 4,119,905, Cl. 323-21.000.

Prete, Ernest, Jr.: *See—*
Knox, Howard T.; and Prete, Ernest, Jr., 4,118,833, Cl. 24-68.0CD.

Preti, George; Huggins, George R.; and Tonzetich, Joseph, to University of Pennsylvania, Trustees of the. Method of predicting and determining ovulation by monitoring the concentration of volatile sulfur-containing compounds present in mouth air. 4,119,089, Cl. 128-2.00R.

Preuninger, Manfred; Hollender, Gottfried; and Schaber, Herbert, to Cillichemie Ernst Vogelmann. Concrete vessel having wall apertures lined with tubular inserts. 4,118,906, Cl. 52-100.000.

Price, John G. W., to Core Laboratories, Inc. Apparatus and method for sour gas analysis. 4,119,404, Cl. 23-232.00E.

Price, Robert John; and Kamm, Lawrence Joseph, to Orbitran Company, Inc. Automatic operating system for lever type postage metering machine. 4,119,161, Cl. 177-3.000.

Priemer, Joachim: *See—*
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, 4,119,687, Cl. 264-9.000.

Prikhozhan, Ada Mirovna: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.

Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., to General Electric Company. Sintering of silicon nitride using Mg and Be additives. 4,119,475, Cl. 106-73.500.

Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., to General Electric Company. Sintering of silicon nitride using Be additive. 4,119,689, Cl. 264-65.000.

Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., to General Electric Company. Sintering of silicon nitride using Mg and Be additives. 4,119,690, Cl. 264-65.000.

Procter & Gamble Company, The: *See—*
Hutchins, James Peyton, 4,119,660, Cl. 260-502.00R.

Proops, William Alfred: *See—*
Taylor, Robert Graham; and Proops, William Alfred, 4,119,825, Cl. 219-10.730.

Pryor, Harold A.: *See—*
Pryor, Roy R.; and Pryor, Harold A., 4,119,216, Cl. 214-6.00C.

Pryor, Roy R.; and Pryor, Harold A. Sawmill stacker assembly module. 4,119,216, Cl. 214-6.00C.

Puckett, Sandres Alfred, to Fieldcrest Mills, Inc. Method of making patterned tufted fabrics. 4,119,049, Cl. 112-266.000.

Pueschner, Philip R.: *See—*
Holmes, William K.; and Pueschner, Philip R., 4,119,229, Cl. 214-394.000.
Keller, Lynn L.; Pueschner, Philip R.; and Holmes, William K., 4,119,230, Cl. 214-394.000.

Pullerits, Kalju: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.

Pullman Incorporated: *See—*
Adler, Franklin P., 4,119,112, Cl. 137-68.00R.
Naves, David G.; Aquino, Herman A.; and Mish, Robert J., 4,119,042, Cl. 105-368.00R.
Naves, David G.; Aquino, Herman A.; and Morgan, Mitchell L., 4,119,043, Cl. 105-368.00R.

Purdue Frederick Company, The: *See—*
Vesely, Ernst, 4,119,544, Cl. 210-515.000.

Purser, Terry Brook. Composition for pre-treating fabric for transfer printing and a transfer printing process. 4,119,398, Cl. 8-2.50R.

Putnam, Roger L., Jr.; and O'Brien, Edward F., to Package Machinery Company. Short product drop vertical form, fill and seal packaging machine. 4,118,913, Cl. 53-551.000.

Pyanykh, Dmitry Maximovich: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.

Pyatigorsky, Vladimir Mikhailovich: *See—*
Aizenberg, Julian Borisovich; Bukhman, Inokh Borukhovich; Pyatigorsky, Vladimir Mikhailovich; and Solomatina, Natalia Mikhailovna, 4,120,024, Cl. 362-96.000.

Quaker Oats Company, The: *See—*
Bartoo, George O., 4,118,886, Cl. 46-1.00R.

Quick, John D.: *See—*
Metteer, N. Bruce; and Quick, John D., 4,119,927, Cl. 331-11.000.

Quigley, Joseph R.: *See—*
Cass, Boyd E.; Coate, David W.; and Quigley, Joseph R., 4,119,455, Cl. 75-25.000.

Quinn, Halsey P., to Xerox Corporation. Power factor corrector for a resistive load. 4,119,907, Cl. 323-105.000.

R. D. Bussard & Son, Inc.: *See—*
Harris, Richard D.; Smith, Franklin G.; and Moshofsky, Jerome F., 4,118,835, Cl. 24-73.0MC.

R. G. Dixon & Company Limited: *See—*
Gordon, Sidney; Wilkins, John Thomas; and Mayo, Haydn Frank, 4,118,819, Cl. 15-49.00R.

Rabinovich, Vyacheslav Anatolievich: *See—*
Nabiullin, Faat Khatovich; Gertsik, Efim Mikhailovich; Rodionov, Jury Timofeevich; and Rabinovich, Vyacheslav Anatolievich, 4,119,126, Cl. 141-100.000.

Rabinowitz, Mario, to Electric Power Research Institute, Inc. Transmission line breakdown voltage. 4,119,793, Cl. 174-36.000.

Rabo, Jule Anthony: *See—*
Poutsma, Marvin Lloyd; Rabo, Jule Anthony; and Risch, Alan Peter, 4,119,656, Cl. 260-449.00R.

Radian Corporation: *See—*
DeBerry, David W., 4,119,909, Cl. 324-30.00R.

Raftopoulos, Demetrios D.; and Kartalopoulos, Stamatios V., to University of Toledo, The. Method for determining stress-optical constants of optically isotropic and anisotropic materials. 4,119,380, Cl. 73-800.000.

Railoc Company, Inc.: *See*—
Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., 4,118,909, Cl. 52-196.000.
Rank Xerox, Ltd.: *See*—
Sato, Takashi, 4,119,831, Cl. 219-216.000.
Ranz, Erwin: *See*—
Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, 4,119,464, Cl. 96-68.000.
Rasmussen, Poul Rodbroe: *See*—
von Daehne, Welf; and Rasmussen, Poul Rodbroe, 4,119,717, Cl. 424-238.000.
Rath, Gero, to Demag AG. Smelting method. 4,119,454, Cl. 75-12.000.
Rattmann, Rudolf: *See*—
Soldner, Richard; and Rattmann, Rudolf, 4,119,891, Cl. 315-389.000.
Rauma-Repola Oy: *See*—
Kaarnametsa, Matti, 4,119,222, Cl. 214-83.240.
Ray, Richard E., to G. D. Searle & Co. Thio-ester of 1 (p-chlorobenzoyl)-5-methoxy-2-methylindole-3-acetic acid. 4,119,638, Cl. 260-326.12A.
Raymond Lee Organization, Inc., The: *See*—
Brutlag, Minehart, 4,119,250, Cl. 224-49.000.
Gorsky, Peter, 4,118,882, Cl. 43-17.000.
Kanocz, Julianna, 4,119,289, Cl. 248-454.000.
Payne, Dannie L., 4,119,301, Cl. 256-41.000.
Raynes, Edward Peter; Shanks, Ian Alexander; and Varney, John Charles. Liquid crystal displays. 4,119,367, Cl. 350-333.000.
RCA Corporation: *See*—
Abbott, Liston; Beakley, Guy Ward; and Flory, Robert Earl, 4,120,001, Cl. 358-11.000.
Ahmed, Adel Abdel Aziz, 4,119,924, Cl. 330-288.000.
Bosselaers, Robert Jan, 4,119,925, Cl. 331-1.00A.
Chin, Te Ning, 4,119,882, Cl. 313-411.000.
Fox, Edward Coley, 4,119,812, Cl. 179-100.40D.
Harayda, George Michael, 4,120,044, Cl. 364-900.000.
Ipri, Alfred Charles; and Scott, Joseph Hurlong, Jr., 4,119,992, Cl. 357-4.000.
Lewis, Henry Garton, Jr.; and Calo, Seraphin Bernard, 4,119,945, Cl. 340-146.1AQ.
Nahay, Lawrence Paul, 4,119,807, Cl. 179-18.0BC.
Petrizio, Cesare James, 4,119,864, Cl. 307-116.000.
Rockett, Leonard Richard, Jr., 4,119,961, Cl. 340-347.0DD.
Reading Alloys, Inc.: *See*—
Perfect, Frederick H., 4,119,457, Cl. 75-134.00N.
Redding, Robert J. Gas detection. 4,119,950, Cl. 340-524.000.
Reddy, Reddy Reddy Venketeshwara; and Kelso, David Matthews, to Abbott Laboratories. Multiple sample, radioactive particle counting apparatus. 4,119,850, Cl. 250-328.000.
Redifon Flight Simulation Limited: *See*—
Murray, Paul Michael, 4,119,956, Cl. 340-324.0AD.
Reichert, Gerhard: *See*—
Loos, Herbert; Heckmaier, Manfred; and Reichert, Gerhard, 4,119,014, Cl. 90-1.60R.
Reid, William P. Water replenishing device for coffee makers. 4,119,019, Cl. 99-306.000.
Reimels, Harry G., to Codman & Shurtleff, Inc. Artificial sphincter. 4,118,805, Cl. 3-1.000.
Reischl, Artur; Klussmann, Henning; and Velker, Eugen, to Bayer Aktiengesellschaft. Process for the production of polyisocyanate-polyaddition products using a multi-phase reaction flow tube. 4,119,613, Cl. 526-64.000.
Reiser, Kurt; and Abendroth, Paul, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Printing plate. 4,119,035, Cl. 101-459.000.
Reisinger, Konrad: *See*—
Hoelzl, Ludwig; Maenhardt, Joerg; Reisinger, Konrad; and Singer, Johannes, 4,119,795, Cl. 178-50.000.
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Rellumit-Inter: *See*—
Muller, Jean-Claude, 4,119,540, Cl. 210-142.000.
Rembaum, Alan; and Wallace, Carl J., to California Institute of Technology. Membrane consisting of polyquaternary amine ion exchange polymer network interpenetrating the chains of thermoplastic matrix polymer. 4,119,581, Cl. 521-27.000.
Remontet, Yves, to Societe d'Exploitation des Brevets Neiman SA. Safety anti-theft device for vehicles having a diesel engine. 4,119,171, Cl. 180-114.000.
Resz, Raoul; Bartl, Herbert; Nothen, Karl; Priemer, Joachim; and El-Sayed, Aziz, to Bayer Aktiengesellschaft. Process for the production of powder-form hydrolyzed ethylene/vinyl acetate copolymers. 4,119,687, Cl. 264-9.000.
Revells, Robert G., to Libbey-Owens-Ford Company. Hydraulic system for glass bending apparatus with pressure release assembly. 4,119,427, Cl. 65-159.000.
Revlon, Inc.: *See*—
Dyson, Evelyna Chelsey, 4,118,870, Cl. 33-174.00D.
Goldner, Tibor G.; and Fotiu, Eustace, 4,119,712, Cl. 424-63.000.
Rex, John Walter, to W. R. Grace & Co. Method and apparatus for temperature controlled samplers. 4,119,403, Cl. 23-232.00R.
Reynolds, James T. Fire extinguisher support. 4,119,288, Cl. 248-313.000.
Rha, ChouKyun: *See*—
Hsieh, Dean Shui-Tien; Bright, Roselie Ann; and Rha, ChouKyun, 4,119,733, Cl. 426-46.000.
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Frye, Guenter, 4,119,012, Cl. 89-33.0SF.
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, 4,119,037, Cl. 102-69.000.
Rhodes, Charles Don. Gooseneck trailer with adjustable bogie. 4,119,328, Cl. 280-415.00B.
Rhodes, Mark H., Jr.: *See*—
Laviana, Lawrence J.; Rhodes, Mark H., Jr.; and Doyle, Edward J., 4,119,936, Cl. 337-303.000.
Rhone-Poulenc Industries: *See*—
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Durand, Gilbert; and Monsan, Pierre, 4,119,494, Cl. 195-68.000.
Jay, Pierre, 4,119,555, Cl. 252-66.000.
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Auroy, Michel; Goharel, Maurice; and Zoulalian, Jacques, 4,119,645, Cl. 260-346.400.
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Richmond, Michael Hugh: *See*—
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Hermanson, Gerald P.; Rickel, David M.; and Carr, Robert J., 4,119,448, Cl. 156-73.400.
Rickett, John William Stanley. Surgical device for discharge of faecal matter from the colon. 4,119,100, Cl. 128-350.00R.
Ricoh Co., Ltd.: *See*—
Matsuda, Tsutomu; Maeda, Takeshi; Hirabayashi, Takeo; and Watanabe, Nobuyoshi, 4,119,465, Cl. 96-75.000.
Mochizuki, Nobuo; Demizu, Hiromi; Oyama, Hajime; and Ohnuma, Teruyuki, 4,119,060, Cl. 118-653.000.
Rieffle, Paul F.; and Felker, Charles E., to Coupling Systems, Inc. Pipe and tubing connectors. 4,119,335, Cl. 285-337.000.
Riegel, Herbert; and Strangio, Vincent A., to Lummus Company, The. Production of chlorine. 4,119,705, Cl. 423-507.000.
Ries, Gottfried. Skid prevention device for tires. 4,119,132, Cl. 152-208.000.
Rifflart, Jacques, to CER. Agricultural machine with folding rotatable sections. 4,119,155, Cl. 172-311.000.
Rinaldi, Victor. Semi-submersible vessel. 4,119,052, Cl. 114-264.000.
Rinehart, Dale W., to PPG Industries, Inc. Chemical strengthening of glass. 4,119,760, Cl. 428-410.000.
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Roach, Donald Brian; Van Echo, John Andrew; and Hall, Albert Mangold, to Steel Founders' Society of America. High-strength cast heat-resistant alloy. 4,119,456, Cl. 75-122.000.
Robeller, Walter: *See*—
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Robert Bosch GmbH: *See*—
Nonnenmacher, Gerhard; Robeller, Walter; and Veil, Karl, 4,118,931, Cl. 60-444.000.
Stieringer, Albert, 4,120,038, Cl. 364-705.000.
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Ohlund, Ingvar; and Robertson, Hans, 4,119,317, Cl. 273-105.600.
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Robinson, Glen P., Jr., to Scientific-Atlanta, Inc. Heat transfer system. 4,119,143, Cl. 165-104.00S.
Rockett, Leonard Richard, Jr., to RCA Corporation. CCD Binary-to-Gray code generator. 4,119,961, Cl. 340-347.0DD.
Rockwell International Corporation: *See*—
Chen, Thomas T., 4,120,046, Cl. 365-8.000.
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Rockwool Aktiebolaget: *See*—
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Rogalski, Werner: *See*—
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Rogers, William M., to Engelhard Minerals & Chemicals Corporation. Method of catalytically recombining radiolytic hydrogen and radiolytic oxygen. 4,119,706, Cl. 423-580.000.
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmis-

trova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich. Emulsification method for the processing of kriel to produce protein, lipids and chitin. 4,119,619, Cl. 260-112.00R.

Rohm and Haas Company: *See—*
Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., 4,119,600, Cl. 260-29.6RW.
Johnson, Wayne O.; Warner,. Harlow L.; and Yih, Roy Y., 4,119,667, Cl. 260-566.00F.

Rohrs, Kenneth V.: *See—*
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Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
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Reiser, Kurt; and Abendroth, Paul, 4,119,035, Cl. 101-459.000.

Rollins, Richard Lee: *See—*
Papa, Anthony Joseph; Rollins, Richard Lee; and Critchfield, Frank Edward, 4,119,584, Cl. 521-127.000.

Rolls-Royce Limited: *See—*
Woodward, Clifford Stanley; and McMurtry, David Roberts, 4,118,997, Cl. 74-417.000.

Rolls-Royce (1971) Limited: *See—*
Taylor, Robert Graham; and Proops, William Alfred, 4,119,825, Cl. 219-10.730.

Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, to Rheinmetall GmbH. Carrier projectiles for ejectable payloads. 4,119,037, Cl. 102-69.000.

Roquemore, Cass R.: *See—*
Nyswander, Reuben E.; and Roquemore, Cass R., 4,119,917, Cl. 328-67.000.

Rosemount Office Systems, Inc.: *See—*
Mollenkopf, Lloyd C., 4,119,287, Cl. 248-243.000.

Rosler, Heinz: *See—*
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.

Ross, Robert G.; and McCracken, Mark M., to Parkell Products, Inc. Dental handpiece control apparatus. 4,118,866, Cl. 32-22.000.

Ross, Ronald D., Jr.: *See—*
Fine, David H.; Ross, Ronald D., Jr.; and Rounbehler, David P., 4,119,402, Cl. 23-230.00B.

Rossborough Manufacturing Co.: *See—*
Boron, Joseph J., 4,118,988, Cl. 73-425.40R.

Rosselli del Turco, Bonaccorso: *See—*
Omodei-Sale, Amedeo; Pifferi, Giorgio; Consonni, Pietro; Diena, Alberto; and Rosselli del Turco, Bonaccorso, 4,119,635, Cl. 260-308.00R.

Rostoker, David, to Pittsburgh Corning Corporation. Pulverulent borosilicate composition and a method of making a cellular borosilicate body therefrom. 4,119,422, Cl. 65-22.000.

Roth, David S., to Brown & Williamson Tobacco Corporation. Tobacco substitute having improved ash characteristics. 4,119,104, Cl. 131-2.000.

Roth Freres, S.A.: *See—*
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.

Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, to Roth Freres, S.A. Moulded light-weight framed panel. 4,119,749, Cl. 428-99.000.

Roth, Lee J. Package. 4,119,202, Cl. 206-432.000.

Roth, Michel: *See—*
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.

Rothchild, Ronald D., to Airco, Inc. Method and apparatus for inerting the atmosphere above a moving product surface. 4,118,873, Cl. 34-36.000.

Rougeot, Henri, to Thomson-CSF. Solid detector for ionizing radiation. 4,119,852, Cl. 250-370.000.

Rounbehler, David P.: *See—*
Fine, David H.; Ross, Ronald D., Jr.; and Rounbehler, David P., 4,119,402, Cl. 23-230.00B.

Roush, Maurice Dean, to Cray Research, Inc. Cooling system for electronic assembly. 4,120,021, Cl. 361-388.000.

Roussel Uclaf: *See—*
Buendia, Jean; Nierat, Jeanine; and Deroy, Robert, 4,119,727, Cl. 424-275.000.

Rubin, Barry Jay: *See—*
Cases, Moises; Chang, Fung Yuel; and Rubin, Barry Jay, 4,120,035, Cl. 364-602.000.

Ruffell, Derrick: *See—*
Oakley, John; and Ruffell, Derrick, 4,119,325, Cl. 277-207.00R.

Ruggles, Benjamin C., Jr.: *See—*
Eloranta, Vaito K.; and Ruggles, Benjamin C., Jr., 4,119,369, Cl. 351-49.000.

Ruhl, Oskar: *See—*
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.

Russell, Timothy D.: *See—*
Goeppner, Ronald R.; Kuehne, William M.; and Russell, Timothy D., 4,118,972, Cl. 73-40.000.

Rustenburg Platinum Mines Limited: *See—*
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,653, Cl. 260-429.00R.
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 4,119,654, Cl. 260-429.00R.

Rutshtein, Alexander; and Staroselsky, Naum, to Compressor Controls Corporation. Methods and systems for controlling the operation of means for compressing a fluid medium and the corresponding networks. 4,119,391, Cl. 417-26.000.

Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., to Railoc Company, Inc. Silo door construction. 4,118,909, Cl. 52-196.000.

Rutten, Peter T.: *See—*
Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., 4,118,909, Cl. 52-196.000.

Ryashentsev, Vladimir Jurievich: *See—*
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.

Ryu, Ji-Yong, to UOP Inc. Process for transalkylation of alkylaromatic hydrocarbons using a catalyst comprising TiF_4 and a metal oxide. 4,119,675, Cl. 260-672.00T.

Ryu, Ji-Yong, to UOP Inc. Process for isomerization of alkylaromatic hydrocarbon. 4,119,676, Cl. 260-668.00A.

Ryu, Ji-Yong, to UOP Inc. Titanium tetrachloride as heterogeneous catalyst for transalkylation of alkylaromatic hydrocarbons. 4,119,677, Cl. 260-672.00T.

S.A.E.S. Getters S.p.A.: *See—*
Barosi, Aldo, 4,119,488, Cl. 176-68.000.

S. B. Foot Tanning Company: *See—*
Waite, Richard G., 4,118,959, Cl. 69-30.000.

S. Mechele Limited: *See—*
Sim, Nigel L., 4,119,088, Cl. 126-413.000.

Saab-Scania Aktiebolag: *See—*
Ohlund, Ingvar; and Robertson, Hans, 4,119,317, Cl. 273-105.600.

Sabacky, Milton J.: *See—*
Knowles, William S.; and Sabacky, Milton J., 4,119,652, Cl. 260-429.00R.

Sabaroff, Samuel: *See—*
United States of America, National Aeronautics and Space Administration; Johannsen, Klaus G.; Sabaroff, Samuel; and Henry, Varice F., 4,119,964, Cl. 343-17.700.

Sachs-Systemtechnik GmbH: *See—*
Hengst, Bernd, 4,119,517, Cl. 204-229.000.
Paschakarnis, Peter; Hengst, Bernd; and Wychnanek, Rainer, 4,119,520, Cl. 204-276.000.

Sacht, Hans Otto, to Gebruder Welger. Machine for forming a round bale of fibrous agricultural material. 4,119,026, Cl. 100-89.000.

Saeki, Keiso: *See—*
Usui, Hideo; Ishige, Sadao; and Saeki, Keiso, 4,119,777, Cl. 544-6.000.

Said, Sami I. Vasoactive polypeptide and method of preparation from neural tissue. 4,119,618, Cl. 260-112.00R.

Saidl, Jaroslav: *See—*
Drobnik, Stefan; Koschorke, Herbert; Kaufmann, Friedrich; and Saidl, Jaroslav, 4,119,561, Cl. 252-301.10W.

St. Amand, Robert: *See—*
Cassidy, Raymond T.; and St. Amand, Robert, 4,119,200, Cl. 206-387.000.

St. Jacques, Joseph A.: *See—*
Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., 4,119,358, Cl. 339-111.000.

Saito, Katsuro: *See—*
Kuraoka, Yasuo; Kurosawa, Astushi; Shirai, Tetsuo; and Saito, Katsuro, 4,118,984, Cl. 73-295.000.

Saito, Masato: *See—*
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.

Saito, Takeo; and Segawa, Takashi, to Seiko Koki Kabushiki Kaisha. Light emitting indicating circuit for a timepiece. 4,119,892, Cl. 318-138.000.

Saitoh, Kozo; and Izumi, Sumio, to Mitsui Mining & Smelting Co., Ltd. Method for separating mixed plastics. 4,119,533, Cl. 209-155.000.

Sakakibara, Shumpei: *See—*
Nagatsu, Toshiharu; and Sakakibara, Shumpei, 4,119,620, Cl. 260-112.50R.

Sakalauskas, Valerienas Antano: *See—*
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.

Sakamoto, Yuzaburo, to Hitachi, Ltd. Automatic bonding apparatus for assembling semiconductor devices. 4,119,259, Cl. 228-4.500.

Sakata, Isao: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.

Sakurai, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Dynamoelectric machines. 4,119,873, Cl. 310-56.000.

Salemi, Nicholas A.: *See—*
Wien, Raymond E.; Cotton, John F.; and Salemi, Nicholas A., 4,119,935, Cl. 335-167.000.

Salter Housewares, Limited: *See—*
Ackeret, Peter, 4,119,162, Cl. 177-229.000.

Samokhina, Olga Vasilievna: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.

Samuels, Ernest K., to Ernie Samuels, Inc. Flexible hose with wear indicator. 4,119,123, Cl. 138-122.000.

Sancken, Ernest H.: *See—*
Smith, Kenneth L.; and Sancken, Ernest H., 4,119,193, Cl. 198-371.000.

Sander, Rolf; and Oberste-Beulmann, Klaus, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei, m.b.H.; and Bergwerksverband, G.m.b.H. Cutter drum. 4,119,350, Cl. 299-87.000.

Sanders Associates, Inc.: *See—*
Zindler, Jerrold, 4,119,379, Cl. 356-4.000.

Sanders, James Milton: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.

Sanders, Robert J.: *See—*
Fuller, Robert T.; and Sanders, Robert J., 4,119,207, Cl. 211-45.000.

Sandoz, Inc.: *See—*
Hardtmann, Goetz E., 4,119,720, Cl. 424-258.000.

Sandvik Aktiebolag: *See—*
Ekemar, Sven Karl Gustav; and Fischer, Udo Karl Reinhold, 4,119,459, Cl. 75-243.000.

Sandy, Julius W., to Wahl Clipper Corporation. Hair trimming head. 4,118,863, Cl. 30-195.000.

Sangamo Weston, Inc.: *See—*
Outhwaite, Stephen; and Majure, James C., 4,119,846, Cl. 250-252.000.

Sangesland, Odd E.: *See—*
Knowles, Gregory W.; Sangesland, Odd E.; Vroom, Henry J.; and Madey, Robert W., 4,119,085, Cl. 126-271.000.

Sangster, Richard H. B.: *See—*
Bruce, John C.; Davies, John F.; de Jong, Jacobus J. A.; Pullerits, Kalju; and Sangster, Richard H. B., 4,118,941, Cl. 405-204.000.

Sansur, Musa M.; Vlastelica, Daniel L.; and Delea, Anne C., to Technicon Instruments Corporation. Total bilirubin assay. 4,119,401, Cl. 23-230.00B.

Santer, J. Owen: *See—*
Anderson, George J.; Desmond, Timothy F.; and Santer, J. Owen, 4,119,762, Cl. 428-524.000.

Saridakis, Nikolaus, to Volkswagenwerk Aktiengesellschaft. Negative cobalt electrode for an alkaline storage battery. 4,119,771, Cl. 429-178.000.

Sasaki, Masayuki; and Tamano, Motokazu, to Tokyo Shibaura Electric Co., Ltd. Digital display for cooking time and power of electric cooking device. 4,119,957, Cl. 340-337.000.

Sasaki, Takehiko: *See—*
Maeda, Hidetoshi; and Sasaki, Takehiko, 4,120,036, Cl. 364-705.000.

Sato, Goro: *See—*
Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, 4,119,568, Cl. 252-437.000.

Sato, Hiroo, to Kokusan Denki Co., Ltd. Ignition system for an internal combustion engine. 4,119,076, Cl. 123-148.00E.

Sato, Hiroshi: *See—*
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,119,492, Cl. 195-28.0VB.

Sato, Ichitaro, to Sony Corporation. Head switching control apparatus for use in a video signal processing system. 4,120,007, Cl. 360-64.000.

Sato, Masaaki, to Olympus Optical Company Ltd. Desk-top electronic calculator and tape recorder assembly. 4,120,037, Cl. 364-705.000.

Sato, Masanari: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.

Sato, Masanobu, to Olympus Optical Company Ltd. Cassette tape recorder with detachable coupling to radio. 4,119,813, Cl. 179-100.110.

Sato, Mitsuhiro: *See—*
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192-24.000.

Sato, Mituharu; and Nakajima, Seiji, to Toshiba Kikai Kabushiki Kaisha. Tool storage magazine devices. 4,119,213, Cl. 214-1.0BB.

Sato, Takashi, to Rank Xerox, Ltd. Contact pressure adjusting device in heating pressing fixing apparatus for electrophotographic copiers. 4,119,831, Cl. 219-216.000.

Sato, Tomi: *See—*
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.

Sato, Yo, to Kabushiki Kaisha Sato. Ink roller device for printing head of hand labeler. 4,119,033, Cl. 101-348.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Core for rolled label strip. 4,119,280, Cl. 242-68.500.

Sauerteig, Wolfgang; Himmelmann, Wolfgang; Meyer, Rudolf; Ranz, Erwin; and Pelz, Willibald, to AGFA-Gevaert Aktiengesellschaft. Process for hardening photographic layers containing gelatine. 4,119,464, Cl. 96-68.000.

Saunders, Graham John, to Huwood Limited. Mine roof support. 4,118,939, Cl. 61-45.00D.

Sawa, Kenneth B.: *See—*
Mehaffy, Gordon E.; and Sawa, Kenneth B., 4,119,120, Cl. 137-885.000.

Sawada, Yoshihisa: *See—*
Tuda, Goro; Sawada, Yoshihisa; and Mugitani, Yasuhiro, 4,119,015, Cl. 90-17.000.

Sawatari, Takeo: *See—*
Keating, Patrick N.; Koppelman, Roger F.; and Sawatari, Takeo, 4,119,940, Cl. 340-5.00H.

Sawruk, John M.: *See—*
Aldrich, William L.; and Sawruk, John M., 4,119,067, Cl. 123-52.0MB.

Saxton, Olivia. Anchor for furniture including television sets with telescopic insert rod. 4,118,902, Cl. 52-27.000.

Scan-Optics, Inc.: *See—*
Thaler, Michael; and Gocht, Ronald, 4,120,049, Cl. 365-230.000.

Scapa-Porritt Limited: *See—*
Gisbourne, Bryan James, 4,119,754, Cl. 428-255.000.

Scapes, John N., to Gould Inc. Valve with enclosed soft tip stem. 4,119,296, Cl. 251-210.000.

Schaber, Herbert: *See—*
Preuninger, Manfred; Hollender, Gottfried; and Schaber, Herbert, 4,118,906, Cl. 52-100.000.

Schach, Robert; and Scholl, Peter, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit arrangement. 4,119,868, Cl. 307-253.000.

Schade, Gerhard: *See—*
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Schafer, Walter: *See—*
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Schegolev, German Mikhailovich: *See—*
German, Valentin Ostapovich; Kukota, Jury Pavlovich; Ljubimov, Grigory Alexandrovich; Parfenov, Boris Vladimirovich; Popov, Alexandr Nikolaevich; and Schegolev, German Mikhailovich, 4,119,876, Cl. 313-231.400.

Schenectady Chemicals, Inc.: *See—*
Keating, John T., 4,119,605, Cl. 260-33.20R.
Keating, John T., 4,119,608, Cl. 528-188.000.
Keating, John T., 4,119,758, Cl. 428-379.000.

Schering, A.G.: *See—*
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, 4,119,626, Cl. 260-239.55C.

Schieber, Hans; and Lutz, Winfried, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Yarn feed arrangements for knitting machines. 4,118,955, Cl. 66-158.000.

Schiefer, Erwin; and Bisping, Heinz, to Hilti Aktiengesellschaft. Pipe clamp. 4,118,838, Cl. 24-115.00R.

Schiefer, Erwin: *See—*
Bisping, Heinz; and Schiefer, Erwin, 4,119,285, Cl. 248-72.000.

Schiffman, Murray M., to MBI, Inc. Method for producing a design on a flat or arcuate surface. 4,119,484, Cl. 156-659.000.

Schildbach, August J., to Brunswick Corporation. Apparatus for producing fine metal filaments. 4,118,845, Cl. 29-33.00K.

Schillebeeckx. Konrad C.: *See—*
Draizen, Seymour; and Schillebeeckx, Konrad C., 4,119,278, Cl. 242-25.00A.

Schilling, Paul K.: *See—*
Hobson, John A.; and Schilling, Paul K., 4,119,757, Cl. 428-311.000.

Schippers, Heinz; Dammann, Peter; and Bauer, Karl, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Processes and apparatus for thermal treatment of filaments. 4,118,843, Cl. 28-255.000.

Schlegel (UK) Limited: *See—*
Oakley, John; and Ruffell, Derrick, 4,119,325, Cl. 277-207.00R.

Schloemann-Siemag Aktiengesellschaft: *See—*
Vogtmann, Lothar; Braun, Martin; and Kregl, Josef, 4,119,256, Cl. 226-177.000.

Schlumberger Technology Corporation: *See—*
Waggoner, James A., 4,119,847, Cl. 250-252.000.

Schlusener, Horst: *See—*
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Schluter, Bernard C.: *See—*
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Schmatz, Duane J.: *See—*
Yen, Chia-Ming; and Schmatz, Duane J., 4,119,262, Cl. 228-206.000.

Schmermund, Alfred. Glue applicators. 4,119,058, Cl. 118-411.000.

Schmidlin, Julius, to Ciba-Geigy Corporation. Process for the manufacture of steroid carboxylic acids and the esters thereof. 4,119,625, Cl. 260-239.55D.

Schmidt, Werner: *See—*
Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, 4,119,612, Cl. 528-232.000.

Schmitt, Frederick Louis: *See—*
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.

Schneider, Alan Arthur; and Bowser, George C., to Catalyst Research

Corporation. Thermal battery having iron pyrite depolarizer. 4,119,769, Cl. 429-112.000.
Schneider, Louis; and Graham, David E., to GAF Corporation. Insecticidal N-methylpyrrolidinonylacetanilides. 4,119,725, Cl. 424-274.000.
Schneider, Peter F. Piston pin remover and installer. 4,118,852, Cl. 29-283.000.
Schneider, William P., to Upjohn Company, The. Thromboxane B aldehyde intermediates. 4,119,648, Cl. 260-405.000.
Schneider, William P., to Upjohn Company, The. Thromboxane B dialkyl-acetal diol intermediates. 4,119,650, Cl. 260-408.000.
Schnoeller, Manfred: *See*—
Haas, Ernst; Platzoeder, Karl; and Schnoeller, Manfred, 4,119,441, Cl. 148-1.500.
Schnorrenberg, Josef, to Jos. Schneider & Co. Optische Werke. Pressure-regulating valve. 4,119,294, Cl. 251-129.000.
Scholl, Hans; and Bernewasser, Horst, to Kochs Adler AG. Template control for sewing machines. 4,119,048, Cl. 112-121.120.
Scholl, Peter: *See*—
Schach, Robert; and Scholl, Peter, 4,119,868, Cl. 307-253.000.
Schreiber, William L.: *See*—
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Schreihage, Wilhelm: *See*—
Uden, Edward; Schreihage, Wilhelm; and Finck, Johan Christiaan Jacobus, 4,120,020, Cl. 361-386.000.
Schroder, Ernst, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit for automatic volume compression or volume expansion. 4,119,922, Cl. 330-86.000.
Schroeder, Josef, to Bayer Aktiengesellschaft. Bis-benzoxazolyl-compounds. 4,119,634, Cl. 260-307.00D.
Schuck, Paul R.; and Baylor, John M., to J. I. Case Company. Control for cable plows and the like. 4,119,157, Cl. 172-477.000.
Schultz, Ronald L., to Stanford Applied Engineering, Inc. Phono-socket assembly and method. 4,119,359, Cl. 339-128.000.
Schulze, Heinz, to Texaco Development Corporation. Thermoplastic adhesive polyoxamide from polyoxypropylene polyamine. 4,119,615, Cl. 528-343.000.
Schulze, Heinz, to Veb Pentacon Dresden Kamera-und Kinowerke. Single lens reflex camera and exposure measuring mechanism therefor. 4,119,981, Cl. 354-152.000.
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, to Schering, A.G. Depot steroid esters. 4,119,626, Cl. 260-239.55C.
Schurger, Rainer: *See*—
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Schutten, Herman P.: *See*—
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Schymura, Konrad: *See*—
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Scientific-Atlanta, Inc.: *See*—
Robinson, Glen P., Jr., 4,119,143, Cl. 165-104.00S.
SCM Corporation: *See*—
Woo, James T. K.; and Evans, James M., 4,119,599, Cl. 260-29.40R.
Scott, Joseph Hurlong, Jr.: *See*—
Ipri, Alfred Charles; and Scott, Joseph Hurlong, Jr., 4,119,992, Cl. 357-4.000.
Scott, LeRoy W.: *See*—
Allen, Roy A.; and Scott, LeRoy W., 4,119,609, Cl. 528-99.000.
Scott Paper Company: *See*—
Addy, Tralance O.; and Gutman, David P., 4,118,832, Cl. 19-304.000.
Hazard, James E., 4,119,221, Cl. 214-8.50A.
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Segura, Daniel A., to Great Plains Bag Corp. Bag having a handle secured thereto. 4,119,268, Cl. 229-54.00R.
Seiko Koki Kabushiki Kaisha: *See*—
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.
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Seiko Seiki Kabushiki Kaisha: *See*—
Moritomo, Sadao; Tatsumi, Youji; and Sugita, Terumitsu, 4,118,900, Cl. 51-281.00R.
Seiler, Paul: *See*—
Roth, Jacques; Roth, Michel; Seiler, Paul; Lavenir, Roger; and Manigold, Alain, 4,119,749, Cl. 428-99.000.
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, to Toyo Soda Manufacturing Co., Ltd. Process for producing a polyion complex having a nucleic acid base. 4,119,590, Cl. 260-8.000.
Seitz, Charles Lewis; and Grunewald, Paul, to Burroughs Corporation. High resolution character generator for digital display units. 4,119,954, Cl. 340-324.0AD.
Seitz, Max, to Carl Hurth Maschinen- und Zahnradfabrik. Hydraulic chucking device in a hobbing machine. 4,119,013, Cl. 90-1.000.
Sekhavat, Ali; and Bahrampour, Ali-Reza, to Sekhavat, Ali. Optical seismograph. 4,119,173, Cl. 181-122.000.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See*—
Nakamura, Tsugio; Aizaki, Seigo; and Hayashi, Kosei, 4,118,892, Cl. 47-66.000.
Selenia-Industrie Elettroniche Associate S.p.A.: *See*—
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, 4,118,947, Cl. 62-514.00R.
Seleznev, Leonid Pavlovich: *See*—
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich, 4,119,135, Cl. 164-46.000.
Semon, William P. Article of footwear. 4,118,878, Cl. 36-59.00C.
Sendtko, Ulrich: *See*—
Moellgaard, Klaus; and Sendtko, Ulrich, 4,120,045, Cl. 364-900.000.
Serniuk, George E.: *See*—
O'Farrell, Charles P.; and Serniuk, George E., 4,119,616, Cl. 526-31.000.
Seugnet, Monique: *See*—
Chazard, Georges Jean Paul; and Seugnet, Monique, 4,119,545, Cl. 252-8.800.
Seymour, Samuel L., to PPG Industries, Inc. Tong guide means in glass sheet quenching apparatus. 4,119,423, Cl. 65-104.000.
Shackleford, William L.; Winter, Donald C.; and Hall, David B., to TRW Inc. Near infrared laser modulator. 4,119,929, Cl. 331-94.50M.
Shah, Naresh Ramanlal, to Union Carbide Corporation. Polymer/-polyol compositions, processes for making same and processes for making polyurethane products therefrom. 4,119,586, Cl. 521-137.000.
Shanks, Ian Alexander: *See*—
Raynes, Edward Peter; Shanks, Ian Alexander; and Varney, John Charles, 4,119,367, Cl. 350-333.000.
Sharma, Mahindar N.: *See*—
White, Eugene B.; and Sharma, Mahindar N., 4,119,535, Cl. 210-62.000.
Sharp, Douglas Cecil William Thomas; and Ellis, Frank. Apparatus for making hot dogs and the like. 4,119,020, Cl. 99-339.000.
Sharp Kabushiki Kaisha: *See*—
Hayakawa, Masao; and Nomura, Masahiro, 4,120,041, Cl. 364-712.000.
Maeda, Hidetoshi; and Sasaki, Takehiko, 4,120,036, Cl. 364-705.000.
Sharpe, Thomas H. Impaction augmented jet engine. 4,118,929, Cl. 60-262.000.
Shaw, Kenneth R.; and Hansen, Franklin A., to Continental Disc Corporation. Low pressure rupture device. 4,119,236, Cl. 220-89.00A.
Sheeline, Randall D., to United Technologies Corporation. Method of treating radioactive waste. 4,119,560, Cl. 252-301.10W.
Sheldon, Loren B.; and Tomashek, James R., to BJ-Hughes Inc. Block position and speed transducer for a computer-controlled oil drilling rig. 4,119,837, Cl. 235-92.0MP.
Shell Oil Company: *See*—
Allen, Roy A.; and Scott, LeRoy W., 4,119,609, Cl. 528-99.000.
Bauer, Ronald S.; and Lopez, John A., 4,119,595, Cl. 260-21.000.
Gergen, William P.; and Davison, Sol, 4,119,607, Cl. 260-40.00R.
Wellington, Scott L., 4,119,491, Cl. 195-7.000.
Shelley, Peter Stephen; Love, William Darrell; and Stone, Barry Newell, to General Electric Company. Multicell X-ray detector. 4,119,853, Cl. 250-385.000.
Shelley, Shelley W. Modular building construction system. 4,118,905, Cl. 52-79.200.
Shelly, Robert S.: *See*—
George, Lyndell J. C.; and Shelly, Robert S., 4,119,382, Cl. 356-249.000.
Sherhandt, John. Sanitary pickup and disposal device. 4,119,337, Cl. 294-1.00R.
Shevakin, Jury Fedorovich; Seleznev, Leonid Pavlovich; Dobkin, Igor Iosifovich; Vasiliev, Vladislav Alexandrovich; Kharitonova, Ljudmila Dmitrievna; Kandyba, Grigory Ilich; and Parshin, Nikolai Igorevich. Method of producing foil in coils. 4,119,135, Cl. 164-46.000.
Shields, Walter A. Vial assembler. 4,118,914, Cl. 53-282.000.
Shimizu, Akihiko: *See*—
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,119,590, Cl. 260-8.000.
Shin Shirasuna Electric Corp.: *See*—
Hayashi, Kiyoshi, 4,119,910, Cl. 324-83.00R.
Shinbo, Katsutoshi: *See*—
Itoh, Kenichi; Shinbo, Katsutoshi; and Watahiki, Minoru, 4,119,489, Cl. 176-76.000.
Shingaki, Masamitsu: *See*—
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Shinozaki, Satoshi: *See*—
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.
Shinozuka, Katsumasa: *See*—
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Shirai, Tetsuo: *See*—
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Shirokov, Alexei Gavrilovich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexan-

drovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Shirota, Atsushi: *See—*
Abe, Yoshihiko; Okabe, Isao; and Shirota, Atsushi, 4,119,443, Cl. 148-12.100.

Shitamori, Osamu: *See—*
Miyamori, Katsuya; Murai, Toru; and Shitamori, Osamu, 4,119,082, Cl. 126-263.000.

Shkop, Yaroslav Yaroslavovich: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.

Shmanov, Nuribek Nabievich: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.

Shono, Hiroaki; Noji, Toshio; Ishikawa, Shinzo; and Wakasa, Isao, to Nitto Boseki Co., Ltd. Orifice plate for use in bushing for spinning glass fibers. 4,119,420, Cl. 65-1.000.

Shore, William S. Plant package. 4,118,890, Cl. 47-28.00R.

Showa Highpolymer Co., Ltd.: *See—*
Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, 4,119,617, Cl. 528-360.000.

Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., to UOP Inc. Oxygen sensor for industrial air/fuel control. 4,119,513, Cl. 204-195.00S.

Shuster, Edward J.: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,119,574, Cl. 252-522.000.
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.

Sickles, James E., to PPG Industries, Inc. Detachable power supply for induction type electrostatic spray gun. 4,120,017, Cl. 361-228.000.

Sidorov, Valentin Ivanovich: *See—*
Genrikh, Georgy Andreevich; Nikonets, Leonid Alexeevich; Khrusch, Petr Romanovich; Kovalenko, Dmitry Korneevich; Sidorov, Valentin Ivanovich; Belozerov, Jury Nikolaevich; and Gorelin, Evgeny Vasilievich, 4,119,866, Cl. 307-147.000.

Siemens Aktiengesellschaft: *See—*
Bayer, Karlheinz; Dreiseitl, Walter; and Blaschke, Felix, 4,119,893, Cl. 318-178.000.
Drews, Wolf-Dietrich, 4,119,096, Cl. 128-194.000.
Franke, Kurt, 4,119,856, Cl. 250-402.000.
Goldmann, Gerd, 4,119,848, Cl. 250-315.00A.
Haas, Ernst; Platzoeder, Karl; and Schnoeller, Manfred, 4,119,441, Cl. 148-1.500.
Harless, Friedrich, 4,119,814, Cl. 179-107.0FD.
Hoelzl, Ludwig; Maenhardt, Joerg; Reisinger, Konrad; and Singer, Johannes, 4,119,795, Cl. 178-50.000.
Jantsch, Ottomar; and Reiss, Karl, 4,119,841, Cl. 250-213.0VT.
Kotschak, Otto; and Frank, Richard, 4,119,234, Cl. 220-2.10R.
Soldner, Richard; and Rattmann, Rudolf, 4,119,891, Cl. 315-389.000.
Wax, Franz, 4,119,034, Cl. 101-366.000.
Zibert, Klaus, 4,119,870, Cl. 307-355.000.
Zibert, Klaus, 4,119,871, Cl. 307-355.000.

Sietmann, Vernon H.; and Rohrs, Kenneth V. Method and means of drying particulate material. 4,118,875, Cl. 34-174.000.

Signode Corporation: *See—*
Gould, Russell J.; and Adams, Karl G., 4,119,449, Cl. 156-73.500.

Siliconix Incorporated: *See—*
Hill, Lorimer K., 4,119,960, Cl. 340-347.0AD.

Silvey, Elmer R. Tree felling ram with safety check valve. 4,119,298, Cl. 254-93.00R.

Sim, Nigel L., to S. Mechele Limited. Soldering irons. 4,119,088, Cl. 126-413.000.

Simeth, Claus: *See—*
Mayer, Peter; and Simeth, Claus, 4,119,309, Cl. 271-183.000.

Simko, Richard T., to Intel Corporation. Electrically programmable and electrically erasable MOS memory cell. 4,119,995, Cl. 357-23.000.

Simmons, James W., to Ametek, Inc. Laundry machine control system. 4,120,013, Cl. 361-180.000.

Simmrock, Karl Hans; and Hellemanns, Gerhard, to Metallgesellschaft Aktiengesellschaft. Process of producing olefin oxide. 4,119,507, Cl. 204-80.000.

Simon, David Julian; Gronner, Alfred Douglas; and Stella, Carl Cono, to Singer Company, The. Method for achieving high accuracy performance from conventional tracking synchro to digital converter. 4,119,958, Cl. 340-347.0SY.

Simon, Virgil S., to Thomas A. Schutz Co., Inc. Animated display device having a curved platen and a movable film. 4,118,879, Cl. 40-437.000.

Simonetti, Enrico: *See—*
Diedrich, Karl Heinz; Misiano, Carlo; Simonetti, Enrico; and Fazi, Marco, 4,118,947, Cl. 62-514.00R.

Simoons, John R. A.: *See—*
Wyburn-Mason, Roger, 4,119,723, Cl. 424-273.00R.

Simpson, Donald C.: *See—*
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., 4,118,977, Cl. 73-141.00R.

Singer Company, The: *See—*
Goldfischer, Lester I., 4,119,968, Cl. 343-100.0ME.
Membrino, Robert J.; and Gaughan, John C., 4,120,028, Cl. 364-200.000.
Simon, David Julian; Gronner, Alfred Douglas; and Stella, Carl Cono, 4,119,958, Cl. 340-347.0SY.

Singer, Johannes: *See—*
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van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.

Siverling, Michael McHugh: *See—*
Leighton, Howard Noyes; Siverling, Michael McHugh; and Wilfinger, Raymond John, 4,119,947, Cl. 340-146.3AG.

Sivill, Alistair David, to Lucas Industries Limited. Energy conversion systems. 4,118,932, Cl. 60-500.000.

Six, Jean-Claude Gerard: *See—*
Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, 4,119,835, Cl. 219-501.000.

SK&F Lab Co.: *See—*
Lewis, Joseph J.; and Webb, Robert L., 4,119,781, Cl. 548-337.000.

SKF Industrial Trading & Development Company B.V.: *See—*
Ernst, Horst Manfred; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,119,187, Cl. 192-98.000.

Skoog, Hans, to ASEA AB. Static convertor. 4,119,897, Cl. 318-331.000.

Skyway Recreation Products: *See—*
Hoffman, Edward Hugo, 4,119,174, Cl. 181-231.000.

Sleever: *See—*
Fresnel, Jacques, 4,118,916, Cl. 53-292.000.

Smaling, Oral M., to National Union Electric Corporation. Filter bag construction for a vacuum cleaner and method of operation. 4,119,414, Cl. 55-97.000.

Small, Robert F.; and Meredith, Joel B., to General Cable Corporation. Lifting equipment having telescopic boom with automatic extension limiting. 4,118,907, Cl. 52-115.000.

Smart, Frederick R., to Hyyck Corporation. Papermaker's felt with grooved surface. 4,119,753, Cl. 428-234.000.

Smid, Joost, to Ultra-Centrifuge Nederland N.V. System for the continuous separation of a gaseous mixture. 4,119,418, Cl. 55-158.000.

Smiley, Kenneth A., to Pennsylvania Plastic Products, Inc. Protective closure for internal pipe threads. 4,119,121, Cl. 138-96.00T.

Smith, Frank C., Jr.; and Chang, Richard C., to Dionex Corporation. Method for forming agglomerated ion exchange resin. 4,119,580, Cl. 521-28.000.

Smith, Franklin G.: *See—*
Harris, Richard D.; Smith, Franklin G.; and Moshofsky, Jerome F., 4,118,835, Cl. 24-73.0MC.

Smith, George W.: *See—*
Hayden, Daniel B.; Smith, George W.; and Kaplit, Michael, 4,119,842, Cl. 250-201.000.

Smith, Herman W., to Upjohn Company, The. cis-4,5-Didehydro-13,14-didehydro-PGF_1 compounds. 4,119,662, Cl. 562-503.000.

Smith, Herman W., to Upjohn Company, The. 5-Oxa-13,14-didehydro-PGE_1 compounds. 4,119,664, Cl. 562-503.000.

Smith, Homer Grafton, to Homco International, Inc. Casing slotter. 4,119,151, Cl. 166-298.000.

Smith, Jesse Britton. Vehicular tire air pressure measuring system. 4,119,944, Cl. 340-58.000.

Smith, Kenneth L.; and Sancken, Ernest H., to A. O. Smith Harvestore Products, Inc. Shuttle type livestock feeder. 4,119,193, Cl. 198-371.000.

Smith, L. Eugene. Farm apparatus. 4,119,329, Cl. 280-415.00R.

Smith, Oliver Wendell; and Koleske, Joseph Victor, to Union Carbide Corporation. Polyepoxide high solids coatings. 4,119,593, Cl. 260-18.0EP.

Smith, Peter John Fennemore, to Smiths Industries Limited; and Phosphor Products Company Limited. Deposition of electroluminescent material through superimposed dual masks. 4,119,745, Cl. 427-66.000.

Smith, Richard T.: *See—*
Jacyno, Anthony; and Smith, Richard T., 4,118,865, Cl. 30-276.000.

Smith, Robert J. Heat transfer and conditioning unit. 4,119,080, Cl. 126-110.00R.

Smiths Industries Limited: *See—*
Smith, Peter John Fennemore, 4,119,745, Cl. 427-66.000.

Sneath, Michael Edwin: *See—*
Barwick, Bryan Edwin; and Sneath, Michael Edwin, 4,119,739, Cl. 426-573.000.

Snedden, William H., to Westinghouse Electric Corp. Dividing timer. 4,120,014, Cl. 361-196.000.

Snyder, J. Rush; and Myers, Timothy. Apparatus for cutting scrap tires. 4,119,277, Cl. 241-167.000.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Pratelli, Cesare, 4,119,805, Cl. 179-18.0FC.

Societe de Prospection et d'Inventions Techniques SPIT: *See—*
Combette, Marc; and Ollivier, Jean, 4,119,257, Cl. 227-10.000.

Societe DETEC S.A.: *See*—
Kurz, Maurice, 4,119,400, Cl. 422-298.000.
Societe d'Exploitation des Brevets Neiman SA.: *See*—
Remontet, Yves, 4,119,171, Cl. 180-114.000.
Soderberg, Bo, to AB Vardeskydd. Service box. 4,119,269, Cl. 232-43.300.
Sokolovsky, Alexandr Iudovich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Solar Energy Systems, Inc.: *See*—
Brussels, Nathan E., 4,119,086, Cl. 126-271.000.
Soldner, Richard; and Rattmann, Rudolf, to Siemens Aktiengesellschaft. Oscilloscope for the image display of sectional planes of a body. 4,119,891, Cl. 315-389.000.
Solomatina, Natalia Mikhailovna: *See*—
Aizenberg, Julian Borisovich; Bukhman, Inokh Borukhovich; Pyatigorsky, Vladimir Mikhailovich; and Solomatina, Natalia Mikhailovna, 4,120,024, Cl. 362-96.000.
Sommer, Richard: *See*—
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Sony Corporation: *See*—
Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, 4,120,005, Cl. 360-61.000.
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,120,019, Cl. 361-385.000.
Miyaoka, Senri, 4,119,883, Cl. 313-414.000.
Nagami, Masaru; Hori, Kenji; Masaoka, Hiromu; and Kishi, Yoshio, 4,120,006, Cl. 360-72.000.
Ninomiya, Takeshi, 4,120,000, Cl. 358-8.000.
Sato, Ichitaro, 4,120,007, Cl. 360-64.000.
Sorensen, Per Germann, to Danfoss A/S. Single phase asynchronous motor. 4,119,894, Cl. 318-221.00D.
Sosedov, Vladimir Petrovich: *See*—
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
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Southern Railway Company: *See*—
Miller, John R., 4,119,154, Cl. 171-16.000.
Souwand, Steve Elia, to Polysar Limited. Flow measurement. 4,118,982, Cl. 73-194.00R.
Space-Age Control, Inc.: *See*—
Emerson, Donald E., 4,119,327, Cl. 280-302.000.
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., to Spanl, Abram N. Cutter mechanism for tufting machine or the like. 4,119,047, Cl. 112-79.0FF.
Spanl, Abram N.: *See*—
Spanel, Abram N.; Eiland, P. Frank; Jacobs, David R.; and Buell, David N., 4,119,047, Cl. 112-79.0FF.
Sparrevohn, Frederic D. R. Security latch. 4,119,336, Cl. 292-268.000.
Spaziante, Placido Maria; and Nidola, Antonio, to Oronzio de Nora Impianti Elettrochimici S.p.A. Two layer ceramic membranes and their uses. 4,119,503, Cl. 204-59.00R.
Spear, John Francis: *See*—
Lemon, Maurice Charles; and Spear, John Francis, 4,118,958, Cl. 68-22.00R.
Speca, Anthony N., to National Distillers and Chemical Corporation. Olefin polymerization catalyst. 4,119,773, Cl. 526-130.000.
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Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, 4,119,466, Cl. 96-115.00R.
Speck, Ulrich: *See*—
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, 4,119,626, Cl. 260-239.55C.
Spector, Donald, to Applied Research Commodities Industries, Inc. Emergency oxygen supply. 4,119,097, Cl. 128-203.000.
Spencer, Bette M.: *See*—
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,119,574, Cl. 252-522.000.
Spener, Gerhard: *See*—
Kadner, Martin; Hackstein, Karl-Gerhard; and Spener, Gerhard, 4,119,563, Cl. 252-301.10S.
Sperry, John S.; Krajicek, Richard W.; and Cradeur, Robert R., to Carmel Energy, Inc. Combustion chamber and thermal vapor stream producing apparatus and method. 4,118,925, Cl. 60-39.050.
Sperry Rand Corporation: *See*—
Guenon, Jean-Pierre; and Verdenne, Serge J. C., 4,119,218, Cl. 214-6.00B.
Spiel, Albert, to Nabisco, Inc. High protein rice mixture. 4,119,734, Cl. 426-72.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, to International Flavors & Fragrances Inc. Perfume compositions and colognes containing 1-butanoyl-3,3-dimethylcyclohexane. 4,119,576, Cl. 252-522.000.
Sprecker, Mark A.: *See*—
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Sprung, Philip D. Building structure. 4,118,904, Cl. 52-63.000.
Spruogis, Bronislavas Prano: *See*—
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.
Stackpole Components Company: *See*—
Overton, Arthur Wayne, 4,119,821, Cl. 200-159.00R.
Staehli, Christopher P.: *See*—
Fogg, Robert K., Jr.; and Staehli, Christopher P., 4,119,164, Cl. 180-6.500.
Stage-Brite Inc.: *See*—
Davis, Robert E., 4,119,816, Cl. 200-1.00R.
Stager, William R., to Mead Corporation, The. Fault detection and compensation circuit for ink jet printer. 4,119,973, Cl. 346-75.000.
Stahl, Robert M.: *See*—
Goldstein, Robert H.; and Stahl, Robert M., 4,119,407, Cl. 422-58.000.
Stahle, Helmut: *See*—
Koppe, Herbert; Kummer, Werner; Stahle, Helmut; and Muacevic, Gojko, 4,119,728, Cl. 424-324.000.
Stahler, Paul A. Production of substantially full-diet beef cattle feed through processing of the rumen content of slaughtered cattle. 4,119,741, Cl. 426-641.000.
Stake Technology Ltd.: *See*—
Brown, Douglas Burthum, 4,119,025, Cl. 100-35.000.
Stal-Laval Turbin AB: *See*—
Mansson, Martin; and Torstenfelt, Ragnar, 4,118,847, Cl. 29-156.80R.
Stalwart Dyeing Company Limited: *See*—
Stoyel, Nigel John William, 4,118,956, Cl. 68-5.00D.
Stamicarbon, B.V.: *See*—
Konijnenberg, Erik; Vandenbooren, Franciscus H. A. M. J.; and Verheijen, Egidius J. M., 4,119,782, Cl. 548-313.000.
Stamm, Robert H.: *See*—
Karzmar, Ronald C.; and Stamm, Robert H., 4,119,859, Cl. 250-507.000.
Standard Oil Company (Indiana): *See*—
Albulescu, Peter; and McMahon, Joseph F., 4,119,349, Cl. 299-2.000.
Hopkins, P. Donald; and Hensley, Albert L., Jr., 4,119,531, Cl. 208-251.00H.
Standard Precision, Inc.: *See*—
Barber, Lloyd L.; and Koppelman, Alan J., 4,119,377, Cl. 312-344.000.
Standard T Chemical Company, Inc.: *See*—
Brower, Loyd R., Jr.; Madsen, Leonard P.; and Zutaut, Chesley L., 4,119,522, Cl. 204-300.0EC.
Stanford Applied Engineering, Inc.: *See*—
Schultz, Ronald L., 4,119,359, Cl. 339-128.000.
Stark, Louis, to Hughes Aircraft Company. High data rate frequency scan slotted waveguide antenna. 4,119,971, Cl. 343-768.000.
Stark, Mortimer M. Collapsible lamp shade having interchangeable configurations. 4,120,027, Cl. 362-352.000.
Staroselsky, Naum: *See*—
Rutshtein, Alexander; and Staroselsky, Naum, 4,119,391, Cl. 417-26.000.
Stassen, William N.: *See*—
Cohen, Eleanor B.; Stassen, William N.; and Wintgens, James C., 4,119,477, Cl. 106-99.000.
Stauffer Chemical Company: *See*—
Alesandrini, Carlo G., Jr., 4,119,659, Cl. 260-455.00R.
Baker, Don R.; and Walker, Francis H., 4,119,433, Cl. 71-118.000.
Gaughan, Edmund J., 4,119,432, Cl. 71-98.000.
Gutman, Arnold D., 4,119,716, Cl. 424-220.000.
Teach, Eugene G., 4,119,636, Cl. 260-326.5FL.
Tilles, Harry, 4,119,431, Cl. 71-94.000.
Stearns-Roger Corp.: *See*—
Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., 4,119,534, Cl. 209-291.000.
Steed, Michael Halsey, to Fafco Incorporated. Spinwelded plastic pipe coupling joint. 4,119,334, Cl. 285-236.000.
Steel Founders' Society of America: *See*—
Roach, Donald Brian; Van Echo, John Andrew; and Hall, Albert Mangold, 4,119,456, Cl. 75-122.000.
Steiner, Gordon Lewis, to Honeywell Information Systems, Inc. Method and apparatus for recovering a signal transferred over a common bus in a data processing system. 4,120,029, Cl. 364-200.000.
Steinigeweg, Rosmarie: *See*—
Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, 4,119,631, Cl. 260-295.00A.

Steinwart, Johannes: *See—*
Stock, Dieter; and Steinwart, Johannes, 4,119,073, Cl. 123-122.00D.
Steiper, Otto: *See—*
Hafner, Hermann; and Steiper, Otto, 4,119,227, Cl. 214-305.000.
Stella, Carl Cono: *See—*
Simon, David Julian; Gronner, Alfred Douglas; and Stella, Carl Cono, 4,119,958, Cl. 340-347.0SY.
Stella, Joseph A., to Polaroid Corporation. Film cassette contained processing fluid applicator having particle trapping arrangement. 4,119,371, Cl. 352-130.000.
Stenke, Klaus: *See—*
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.
Sterling Drug Inc.: *See—*
Diana, Guy D.; and Cutler, Royal A., 4,119,668, Cl. 260-567.60P.
Lewis, Thomas R.; and Michne, William F.,' 4,119,628, Cl. 260-293.540.
Steuer, Werner, to Fichtel & Sachs AG. Two-speed bicycle hub with coaster brake and pedal actuated speed shift. 4,119,182, Cl. 192-6.00A.
Stevens, Keith Drummond: *See—*
Morton, John; and Stevens, Keith Drummond, 4,119,898, Cl. 318-341.000.
Stickels, Charles A., to Ford Motor Company. Pack nitriding process for low alloy steel. 4,119,444, Cl. 148-16.600.
Stieringer, Albert, to Robert Bosch GmbH. Flash unit with electronic exposure setting calculator. 4,120,038, Cl. 364-705.000.
Stock, Dieter; and Steinwart, Johannes, to Audi NSU Auto Union Aktiengesellschaft. Spark ignition fuel injection internal combustion engine. 4,119,073, Cl. 123-122.00D.
Stoeckel, Dieter, to G. Rau. Method of making an electrical contact element. 4,119,260, Cl. 228-111.000.
Stoffelsma, Jan: *See—*
van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, 4,119,737, Cl. 426-535.000.
Stolfa, Frank: *See—*
Czajkowski, George J.; and Stolfa, Frank, 4,119,530, Cl. 208-213.000.
Stolpe, Erik; Honkanen, Arto; and Laiho, Erkki, to Pekema OY. Method of coating and cutting wrapper blanks. 4,119,452, Cl. 156-244.190.
Stone, Barry Newell: *See—*
Shelley, Peter Stephen; Love, William Darrell; and Stone, Barry Newell, 4,119,853, Cl. 250-385.000.
Stone, Dennis W. J. Production of pharmaceutical barium sulphate. 4,119,700, Cl. 423-156.000.
Stone, Kirby Lee, to Cincinnati Milacron Inc. Fluid purging system. 4,119,110, Cl. 137-15.000.
Stork-Gamco, Inc.: *See—*
Harben, Grover S., Jr., 4,118,829, Cl. 17-11.000.
Stover, Johannes Hinderikus, to U.S. Philips Corporation. Cathode ray tube. 4,119,885, Cl. 313-479.000.
Stoyel, Nigel John William, to Stalwart Dyeing Company Limited. Fabric printing machine. 4,118,956, Cl. 68-5.00D.
Straatmann, John A.: *See—*
Bosch, Richard A.; and Straatmann, John A., 4,119,445, Cl. 148-36.000.
Strabruken AB: *See—*
Lundgren, Bert Karl Gustaf; and Thaning, Gunnar, 4,119,473, Cl. 106-58.000.
Strachan & Henshaw Limited: *See—*
Hollis, Richard John, 4,119,032, Cl. 101-216.000.
Strangio, Vincent A.: *See—*
Riegel, Herbert; and Strangio, Vincent A., 4,119,705, Cl. 423-507.000.
Straub, Immanuel. Pipe coupling. 4,119,333, Cl. 285-112.000.
Strepetov, Gennady Egorovich: *See—*
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, 4,119,828, Cl. 219-121.00P.
Strout, Russell Brown: *See—*
Golner, Jerold Julius; Miller, William Joseph; and Strout, Russell Brown, 4,119,251, Cl. 225-20.000.
Stull, James T., to United States Steel Corporation. Straightener for a multistrand continuous-casting machine. 4,119,138, Cl. 164-448.000.
Stupec, Gertraud B., to Beatrice Foods Co. Reconstituted fried puffed pork skins. 4,119,742, Cl. 426-641.000.
Sturel, Bernard: *See—*
Michon, Maurice; and Sturel, Bernard, 4,119,928, Cl. 331-94.50P.
Su, Chauchang, to Burroughs Corporation. Method and apparatus for multi-function, stored logic Boolean function generation. 4,120,043, Cl. 364-900.000.
Sublistatic Holding S.A.: *See—*
Mehl, Wolfgang; and Monti, Roland, 4,119,374, Cl. 355-32.000.
Sugawara, Mitsutoshi, to Nippon Electric Co., Ltd. Frequency discriminator circuit. 4,119,919, Cl. 329-103.000.
Sugita, Terumitsu: *See—*
Moritomo, Sadao; Tatsumi, Youji; and Sugita, Terumitsu, 4,118,900, Cl. 51-281.00R.
Sullivan, Alfred Bay, to Monsanto Company. 2(Isopropyldithio)benzimidazole. 4,119,780, Cl. 548-329.000.
Sumida, Shizuo, to Toyo Kogyo Co., Ltd. Motor control means for power driven window. 4,119,899, Cl. 318-459.000.
Summers, David A.; Mazurkiewicz, Marian; Bushnell, Dwight J.; and Blaine, James, to University of Missouri, The Curators of the. Method and apparatus for water jet drilling of rock. 4,119,160, Cl. 175-67.000.
Summers, Jack C.: *See—*
Hegedus, Louis; and Summers, Jack C., 4,119,571, Cl. 252-466.0PT.
Sunaga, Nobuo: *See—*
Masuda, Naosuke; and Sunaga, Nobuo, 4,119,354, Cl. 303-24.00F.
Sunbeam Corporation: *See—*
Edwards, Harrison F., 4,119,081, Cl. 126-140.000.
Sundstrand Corporation: *See—*
Ali Ja'afar, Hamedo; and Iseman, Walter J., 4,119,238, Cl. 220-211.000.
Superior Electric Company, The: *See—*
Leenhouts, Albert C., 4,119,901, Cl. 318-685.000.
Suzuki, Kazuo: *See—*
Ishizuka, Hiroshi; Suzuki, Kazuo; and Tamon, Shinichi, 4,119,500, Cl. 204-16.000.
Suzuki, Noriyuki: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
Suzuki, Takeshi: *See—*
Hatanaka, Kyohei; Inoue, Hajime; Hisatomi, Haruya; Okuda, Koya; Suzuki, Takeshi; Murao, Mikio; and Utiyama, Susumu, 4,119,395, Cl. 431-11.000.
Suzuki, Yoshihisa: *See—*
Miyazaki, Tsutomu; Kato, Takashi; Suzuki, Yoshihisa; and Ueda, Shozo, 4,118,920, Cl. 57-34.00R.
Suzuki, Yutaka: *See—*
Amano, Kenichi; Suzuki, Yutaka; and Kishi, Yoshio, 4,120,005, Cl. 360-61.000.
Svacha, Roy E.: *See—*
Shum, Ming S.; Svacha, Roy E.; Janowski, Kenneth R.; and Fraioli, Anthony V., 4,119,513, Cl. 204-195.00S.
Sventsitsky, Alexandr Sergeevich: *See—*
Nudelman, Boris Izrailovich; Bikbau, Marsel Yanovich; Sventsitsky, Alexandr Sergeevich; Gadaev, Anatoly Yokovlevich; Prikhozhan, Ada Mirovna; and Bun, Isaak Mozesovich, 4,119,467, Cl. 106-100.000.
Swenson, Harold R., to Systematic Packaging, Inc. Apparatus for automatically applying tubing around an object. 4,118,915, Cl. 53-291.000.
Swift & Company: *See—*
Kratochvil, John F., 4,119,732, Cl. 426-36.000.
Syncro Machine Company: *See—*
Draizen, Seymour; and Schillebeeckx, Konrad C., 4,119,278, Cl. 242-25.00A.
Synder, Robert W., to Armstrong Cork Company. Product and method of printing carpet-II. 4,119,397, Cl. 8-2.50A.
Systematic Packaging, Inc.: *See—*
Swenson, Harold R., 4,118,915, Cl. 53-291.000.
Systems Design & Development: *See—*
Krafft, Kurt, 4,118,854, Cl. 29-428.000.
Szoke, Abraham, to Massachusetts Institute of Technology. Method and apparatus for isotope separation from a gas stream. 4,119,509, Cl. 204-157.10R.
Tachick, Henry N.; Arnold, Reginald S.; Belcher, James E.; and St. Jacques, Joseph A., to General Electric Company. Electrical connector switching module. 4,119,358, Cl. 339-111.000.
Takada, Toshio: *See—*
Iwase, Keizo; Takada, Toshio; and Kiyama, Masao, 4,119,536, Cl. 210-50.000.
Takahashi, Hatsuo: *See—*
Mitsuya, Yasunaga; Oguchi, Shigemitsu; Hayakawa, Wataru; Takahashi, Hatsuo; Ishida, Gen-ichi; and Amasaka, Masayoshi, 4,120,010, Cl. 360-103.000.
Takahashi, Naoyuki, to Olympus Optical Company Ltd. Device for displaying magnification in the field of view of a microscope. 4,119,364, Cl. 350-114.000.
Takahashi, Yutaka; Hakamata, Yoshio; and Konno, Masamitu, to Fuji Photo Film Co., Ltd. Apparatus for monitoring photographic processing liquid. 4,119,952, Cl. 340-309.100.
Takara Co., Ltd.: *See—*
Ogawa, Iwakichi, 4,118,888, Cl. 46-22.000.
Takeda Chemical Industries, Ltd.: *See—*
Nakao, Yukihiro; Miyashita, Kasumi; and Toda, Jun, 4,119,435, Cl. 127-34.000.
Takeda, Takehiko: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
Takiyama, Eiichiro: *See—*
Hanyuda, Toshiaki; Kanehiro, Haruyuki; Mori, Kojiro; and Takiyama, Eiichiro, 4,119,617, Cl. 528-360.000.
Tamano, Motokazu: *See—*
Sasaki, Masayuki; and Tamano, Motokazu, 4,119,957, Cl. 340-337.000.
Tamon, Shinichi: *See—*
Ishizuka, Hiroshi; Suzuki, Kazuo; and Tamon, Shinichi, 4,119,500, Cl. 204-16.000.
Tamura, Tetsuomi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Choke breaker system for a carburetor of an internal combustion engine. 4,119,683, Cl. 261-39.00B.
Tanaka, Harumi, to Minolta Camera Kabushiki Kaisha. Self-contained interchangeable lens camera. 4,119,983, Cl. 354-197.000.

Tanaka, Kazumitsu; and Goto, Nobuo, to Nihon Denshi Kabushiki Kaisha. Electron beam exposure system. 4,119,854, Cl. 250-397.000.
Tanaka, Shigeyoshi: *See—*
Nishizawa, Hiroshi; Tanaka, Shigeyoshi; and Fujishima, Minoru, 4,119,679, Cl. 260-835.000.
Tanaka, Shinichi: *See—*
Ishida, Toru; Hattori, Masumi; Tanaka, Shinichi; Sato, Tomi; and Kuwahara, Kenji, 4,119,573, Cl. 252-519.000.
Tanaka, Yukiyasu: *See—*
Noguchi, Masaaki; Tanaka, Yukiyasu; and Motosugi, Katuhiko, 4,119,065, Cl. 123-32.0SP.
Tanney, John W.: *See—*
Tucker, Helen G.; Tanney, John W.; and Hayes, William F., 4,118,973, Cl. 73-55.000.
Tanuska, Pavol: *See—*
Marecek, Jan; Jergl, Ivan; Arbet, Rudolf; Tanuska, Pavol; and Ivana, Viktor, 4,119,243, Cl. 221-298.000.
Tarasov, Alexandr Andreevich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.
Tatsumi, Youji: *See—*
Moritomo, Sadao; Tatsumi, Youji; and Sugita, Terumitsu, 4,118,900, Cl. 51-281.00R.
Taylor, Frank H., to Otis Engineering Corporation. Surface controlled sub-surface safety valve. 4,119,146, Cl. 166-72.000.
Taylor, James B., Jr.; and Cobb, Keith M., to Texas Instruments Incorporated. Method of making an electronic calculator. 4,118,858, Cl. 29-622.000.
Taylor, Robert Graham; and Proops, William Alfred, to Rolls-Royce (1971) Limited. Induction heating apparatus. 4,119,825, Cl. 219-10.730.
Taylor, Wilfred Kenelm, to National Research Development Corporation. Comparison apparatus, e.g. for use in character recognition. 4,119,946, Cl. 340-146.30Q.
TDK Electronics Co., Ltd.: *See—*
Fujiwara, Shinobu, 4,119,554, Cl. 252-63.200.
Teach, Eugene G., to Stauffer Chemical Company. Preparation of acyclic and alicyclic N-substituted halo-2-pyrrolidinones. 4,119,636, Cl. 260-326.5FL.
Technicon Instruments Corporation: *See—*
Sansur, Musa M.; Vlastelica, Daniel L.; and Delea, Anne C., 4,119,401, Cl. 23-230.00B.
Technology Development Corporation: *See—*
Wollert, Walter C., 4,119,797, Cl. 179-1.0VC.
Telediffusion de France: *See—*
De Lamare, Eric P.; and Dudon, Pierre D., 4,119,933, Cl. 333-30.00R.
Teledyne, Inc.: *See—*
Johnson, Gilbert R.; and Olson, Frank A., 4,119,967, Cl. 343-100.0PE.
Telefonaktiebolaget L M Ericsson: *See—*
Lindgren, Erik Gustaf, 4,119,949, Cl. 340-630.000.
Temme, Karl: *See—*
Walther, Carl Kurt; Walther, Henning D.; Hagelueken, Hubert P.; and Temme, Karl, 4,118,896, Cl. 51-163.200.
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna. Cold-setting moulding mixture for producing foundry moulds and cores. 4,119,606, Cl. 260-38.000.
Terminal Data Corporation: *See—*
Morgan, Robert Anthony, 4,119,372, Cl. 353-26.00R.
Terrett, David Stuart: *See—*
Frankfort, Eric J.; and Terrett, David Stuart, 4,119,815, Cl. 179-175.30S.
Tesa S.A.: *See—*
Lendi, Georges; Voinescu, Nicolae; and De Trey, Rene, 4,118,867, Cl. 33-164.00C.
Teschner, David: *See—*
Izraeli, Hyman, 4,118,971, Cl. 72-410.000.
Tessler, Martin M., to National Starch & Chemical Corporation. Starch ether derivatives, a method for the preparation thereof and their use in paper. 4,119,487, Cl. 162-175.000.
Texaco Development Corporation: *See—*
Advani, Prem S., 4,119,412, Cl. 55-70.000.
Schulze, Heinz, 4,119,615, Cl. 528-343.000.
Texaco Inc.: *See—*
Crouch, William B.; Fabiero nee Posadas, Carolina P.; and Robin, Allen M., 4,119,566, Cl. 252-372.000.
Wu, Ching H.; Brown, Alfred; and Hall, Wilbur L., 4,119,149, Cl. 166-266.000.
Yaffe, Roberta, 4,119,551, Cl. 252-46.700.
Texas Instruments Incorporated: *See—*
Bayard, Michel Lucien, 4,119,768, Cl. 429-111.000.
Taylor, James B., Jr.; and Cobb, Keith M., 4,118,858, Cl. 29-622.000.
Th. Kieserling & Albrecht: *See—*
Lorenz, Horst, 4,119,254, Cl. 226-112.000.
Thaler, Michael; and Gocht, Ronald, to Scan-Optics, Inc. Line memory. 4,120,049, Cl. 365-230.000.
Thaning, Gunnar: *See—*
Lundgren, Bert Karl Gustaf; and Thaning, Gunnar, 4,119,473, Cl. 106-58.000.
Thermo Electron Corporation: *See—*
Fine, David H.; Ross, Ronald D., Jr.; and Rounbehler, David P., 4,119,402, Cl. 23-230.00B.
Porier, Victor L.; and Bernhard, William F., 4,118,806, Cl. 3-1.400.
Therrien, Gordon G.: *See—*
Rutten, James B.; Rutten, Peter T.; Therrien, Gordon G.; and Gaylord, Richard S., 4,118,909, Cl. 52-196.000.
Thiokol Corporation: *See—*
Lyles, Bobby J., 4,118,928, Cl. 60-255.000.
Thizy, Andre; Pillon, Daniel; Debourge, Jean-Claude; and Lacroix, Guy, to Pepro. Fungicidal compositions containing phosphorous acid and derivatives thereof. 4,119,724, Cl. 424-45.000.
Thomas A. Schutz Co., Inc.: *See—*
Simon, Virgil S., 4,118,879, Cl. 40-437.000.
Thomas Hunter Limited: *See—*
Edwards, Cyril Kenneth; and Webb, Edward Harry, 4,119,233, Cl. 215-337.000.
Thomas J. Lipton, Inc.: *See—*
Barwick, Bryan Edwin; and Sneath, Michael Edwin, 4,119,739, Cl. 426-573.000.
Thome, Roland; Bings, Hubert; and Obermaier, Hans, to Vereinigte Aluminum-Werke Aktiengesellschaft. Process and equipment for manufacturing vanadium pentoxide. 4,119,707, Cl. 423-592.000.
Thomson-CSF: *See—*
Desperques-Volmier, Serge, 4,119,857, Cl. 250-492.00A.
Legendre, Philippe; and Nef, Jean-Marie, 4,119,923, Cl. 330-284.000.
Rougeot, Henri, 4,119,852, Cl. 250-370.000.
Thornton, Theodore Wayne. Dual latching, child-resistant container. 4,119,232, Cl. 215-222.000.
Thut, Bruno H.; and Lehman, Dale T. Heat exchanger. 4,119,141, Cl. 165-82.000.
Tidwell, Hubert. Mobile agricultural irrigation apparatus. 4,119,272, Cl. 239-178.000.
TII Corporation: *See—*
Armstrong, Edward T., 4,119,273, Cl. 239-254.000.
Tilles, Harry, to Stauffer Chemical Company. Herbicidal effect of a mixture of cis and trans isomers of S-isopropyl-1-(5-ethyl-2-methylpiperidinecarbothioate). 4,119,431, Cl. 71-94.000.
Timkin, Vadim Nikolaevich: *See—*
Belyaev, Vasily Dmitrievich; Chepigo, Sergei Vladimirovich; Korotchenko, Nina Ivanovna; Mezentsev, Alexandr Nikolaevich; Samokhina, Olga Vasilievna; Krasinskaya, Alexandra Leonidovna; Timkin, Vadim Nikolaevich; Shkop, Yaroslav Yaroslavovich; and Colubev, Alexei Olegovich, 4,119,495, Cl. 195-102.000.
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, to Rustenburg Platinum Mines Limited. Co-ordination compounds of platinum. 4,119,653, Cl. 260-429.00R.
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, to Rustenburg Platinum Mines Limited. Compositions containing platinum. 4,119,654, Cl. 260-429.00R.
Toda, Gyozo: *See—*
Jyomura, Shigeru; Matsuyama, Iwao; Miyauchi, Katsuki; Miyashita, Tsune; and Toda, Gyozo, 4,119,886, Cl. 315-101.000.
Toda, Jun: *See—*
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Todd, Carl David: *See—*
Kincheloe, Dan D.; Gregory, Elmo M.; Todd, Carl David; and Gould, Edson B., III, 4,120,031, Cl. 364-464.000.
Todokoro, Masatoshi. Game board. 4,119,312, Cl. 273-1.00R.
Tokuda, Shingo: *See—*
Yokota, Noriyuki; Tokuda, Shingo; Ito, Yoshiro; and Itaya, Kenji, 4,119,508, Cl. 204-128.000.
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, to Tokyo Shibaura Electric Co., Ltd. Integrated injection logic with both grid and internal double-diffused injectors. 4,119,998, Cl. 357-44.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Gocho, Choichi, 4,119,862, Cl. 290-17.000.
Sakurai, Fumio, 4,119,873, Cl. 310-56.000.
Tokyo Shibaura Electric Company, Ltd.: *See—*
Aihara, Mitsuo, 4,120,040, Cl. 364-709.000.
Gocho, Choichi, 4,119,861, Cl. 290-13.000.
Hashimoto, Masaru, 4,119,869, Cl. 307-296.00R.
Heki, Hideaki; Ozaki, Osamu; and Ohno, Masayoshi, 4,119,417, Cl. 55-158.000.
Kuze, Takashi; Matsuki, Toshiharu; Nagaoka, Koji; and Iwai, Naoji, 4,119,761, Cl. 428-472.000.
Nishi, Yusaku; and Fujii, Hideo, 4,119,480, Cl. 156-272.000.
Sasaki, Masayuki; and Tamano, Motokazu, 4,119,957, Cl. 340-337.000.
Tokumaru, Yukuya; Nakai, Masanori; Shinozaki, Satoshi; Nakamura, Junichi; Ito, Shintaro; and Nishi, Yoshio, 4,119,998, Cl. 357-44.000.
Tolley, William K., to UOP Inc. Production of titanium metal values. 4,119,696, Cl. 423-53.000.

Tolley, William K., to UOP Inc. Production of titanium metal values. 4,119,697, Cl. 423-82.000.
Tolmie, Robert J., Jr.: *See—*
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Iyama, Hiroyuki; Akatsuka, Mitsuo; and Tomura, Teruichi, 4,119,887, Cl. 315-101.000.
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Toth, Istvan Tibor; Bite, Pal; Magyar, Gyorgy; Diszler, Eszter; Borsy, Jozsef; Maderspach, Andrea; Polgari, Istvan; Elek, Sandor; and Elekes, Istvan, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT. 2-Phenoxy and 2-phenylthio and 2-phenylamino-alkyl-2-oxazolines. 4,119,633, Cl. 260-307.00F.
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Toyo Kogyo Co., Ltd.: *See—*
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Toyo Soda Manufacturing Co., Ltd.: *See—*
Seita, Toru; Shimizu, Akihiko; and Kosaka, Yujiro, 4,119,590, Cl. 260-8.000.
Toyoda-Koki Kabushiki-Kaisha: *See—*
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Horie, Koji, 4,119,180, Cl. 188-73.500.
Hoshi, Hirohiko; Funayama, Toshio; Ishiguro, Kazuhiko; and Umehara, Hidetomo, 4,119,061, Cl. 123-3.000.
Inoue, Tokuta; Yaegashi, Takehisa; and Aoki, Keiji, 4,119,512, Cl. 204-195.00S.
Itoh, Takaaki; and Kikuchi, Kazuo, 4,119,685, Cl. 261-44.00C.
Kobayashi, Katsuyuki, 4,118,952, Cl. 64-12.000.
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
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Noguchi, Masaaki; Tanaka, Yukiyasu; and Motosugi, Katuhiko, 4,119,065, Cl. 123-32.0SP.
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Trevaskis, William T.; and Olson, William J. Automotive hydrocarbon and water vapor injector system and universal hose connector means for same. 4,119,062, Cl. 123-25.00R.
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Trubody, Bert M., to Patterson-Williams Manufacturing Company. Playground turntable. 4,119,310, Cl. 272-33.00R.
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TRW Inc.: *See—*
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Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Method of mixed illumination. 4,120,026, Cl. 362-231.000.
Tsuchiya, Michio, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process and reactor for preparing ethanolamines. 4,119,670, Cl. 260-585.00C.
Tsuda, Kintaro: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.
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Tubin, Eddie Sam. Personnel cooler. 4,118,946, Cl. 62-514.00R.
Tucker, Helen G.; Tanney, John W.; and Hayes, William F., to Canadian Patents & Development Limited. Apparatus for measuring the flow rate and/or viscosity of a fluid. 4,118,973, Cl. 73-55.000.
Tuda, Goro; Sawada, Yoshihisa; and Mugitani, Yasuhiro, to Kobe Steel, Limited. Billet milling equipment. 4,119,015, Cl. 90-17.000.
Turenko, Oleg Borisovich: *See—*
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.
Turf-Tech Inc.: *See—*
Coldiron, Ronnie Hamilton, 4,119,002, Cl. 83-120.000.
Turi Nagy, Janos; and Niederberger, Felix, to LGZ Landis & Gyr Zug AG. Audio frequency heterodyne means and method. 4,119,912, Cl. 325-58.000.
Turner, Ronald L.: *See—*
Kindig, James K.; and Turner, Ronald L., 4,119,410, Cl. 44-1.00R.
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Chirikjian, Jack G., 4,119,521, Cl. 204-299.00R.
Tuson, Samuel, to Entreprise d'Equipements Mecaniques et Hydrauliques E.M.H. Column structure enabling handling appliances on the seabed, particularly for the assembly and maintenance of well-heads. 4,119,145, Cl. 166-339.000.
Uchida, Tohru: *See—*
Yamada, Yutaka; Kato, Akira; and Uchida, Tohru, 4,119,461, Cl. 96-1.800.
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Uda, Masayuki, to Hoshidenki-Seizo Kabushiki Kaisha. Spark gap device for a cathode ray tube socket. 4,119,878, Cl. 313-325.000.
Uden, Edward; Schreihage, Wilhelm; and Finck, Johan Christiaan Jacobus, to U.S. Philips Corporation. Electronic component with heat cooled substrates. 4,120,020, Cl. 361-386.000.
Ueda, Shozo: *See—*
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Uhlig, Albert R., to Owens-Illinois, Inc. Plastic drum with metal handling ring. 4,119,235, Cl. 220-71.000.
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Umehara, Hidetomo: *See—*
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Unger, Eberhard; and Von Schenk, Wolf-Rudiger, to Gewerkschaft Eisenhutte Westfalia. Apparatus for and method of driving tunnels. 4,118,938, Cl. 405-145.000.
Union Carbide Corporation: *See—*
Bolton, Jack Curtis; and Alexander, Franklin Leroy, 4,119,114, Cl. 137-318.000.
Hodakowski, Leonard Edward; Osborn, Clairborn Lee; and Harris, Edward Bruce, 4,119,640, Cl. 260-340.700.
Kun, Leslie Charles, 4,119,144, Cl. 165-175.000.
Papa, Anthony Joseph; Rollins, Richard Lee; and Critchfield, Frank Edward, 4,119,584, Cl. 521-127.000.
Poutsma, Marvin Lloyd; Rabo, Jule Anthony; and Risch, Alan Peter, 4,119,656, Cl. 260-449.00R.
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Smith, Oliver Wendell; and Koleske, Joseph Victor, 4,119,593, Cl. 260-18.0EP.
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United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Coates, David; and Gray, George William, 4,119,558, Cl. 252-299.000.
United States Gypsum Company: *See—*
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Long, William J., 4,119,752, Cl. 428-198.000.
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Army: *See—*
Allen, Floyd; and Benderly, Asaf A., 4,119,038, Cl. 102-207.000.
Everswick, David N., 4,119,913, Cl. 325-113.000.
Hodes, Harvey A., 4,119,462, Cl. 96-66.300.
Lerman, Russell E., 4,119,040, Cl. 102-249.000.
Palmisano, Rocco Richard, 4,118,861, Cl. 29-631.000.

Wilkins, Paul E.; Neville, Glenn E.; and Fitzgerald, Robert T., 4,119,039, Cl. 102-214.000.
Wong, Theodore T. S., 4,118,857, Cl. 29-574.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Doland, George D. Phased array antenna control. 4,119,972, Cl. 343-844.000.
Hopkins, Phillip M. Apparatus and method for stabilized phase detection for binary signal tracking loops. 4,119,926, Cl. 331-1.00A.
Johannsen, Klaus G.; Sabaroff, Samuel; and Henry, Varice F. Systems and methods for determining radio frequency interference. 4,119,964, Cl. 343-17.700.
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Jhabvala, Murzban D., 4,119,996, Cl. 357-23.000.
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Berke, Herbert, 4,119,916, Cl. 328-62.000.
Fogg, Robert K., Jr.; and Staehli, Christopher P., 4,119,164, Cl. 180-6.500.
Greene, Jack C., 4,119,920, Cl. 330-43.000.
Jacobson, Michael D.; and Grouwinkel, G. Franklin, 4,118,930, Cl. 60-266.000.
Lewis, Bernard L., 4,119,962, Cl. 343-7.700.
Moore, Donald K.; Beaman, George R.; Hightower, John D.; and Graham, Craig W., Jr., 4,119,941, Cl. 340-5.00R.
U.S. Philips Corporation: *See*—
Brissot, Jean-Jacques Lucien Emile; Belouet, Christian; and Martres, Rene, 4,119,744, Cl. 427-45.000.
Coulmance, Jean-Pierre Rene; and Six, Jean-Claude Gerard, 4,119,835, Cl. 219-501.000.
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.
Hubsch, Hubertus; Convertini, Ursula; Dimigen, Heinz; and Luthje, Holger, 4,119,483, Cl. 156-655.000.
Stover, Johannes Hinderikus, 4,119,885, Cl. 313-479.000.
Uden, Edward; Schreihage, Wilhelm; and Finck, Johan Christiaan Jacobus, 4,120,020, Cl. 361-386.000.
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United Technologies Corporation: *See*—
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Sheeline, Randall D., 4,119,560, Cl. 252-301.10W.
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Kronogard, Sven-Olof, 4,118,927, Cl. 60-39.16R.
Universal Maschinenfabrik Dr. Rudolf Schieber KG: *See*—
Schieber, Hans; and Lutz, Winfried, 4,118,955, Cl. 66-158.000.
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Lemon, Maurice Charles; and Spear, John Francis, 4,118,958, Cl. 68-22.00R.
University of Connecticut: *See*—
Jain, Faquir Chand; and Melehy, Mahmoud Ahmed, 4,119,994, Cl. 357-16.000.
University of Missouri, The Curators of the: *See*—
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University of Pennsylvania, Trustees of the: *See*—
Preti, George; Huggins, George R.; and Tonzetich, Joseph, 4,119,089, Cl. 128-2.00R.
University of Toledo, The: *See*—
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UOP Inc.: *See*—
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Hayes, John C.; and Pollitzer, Ernest L., 4,119,529, Cl. 208-139.000.
Neuzil, Richard W.; and Fergin, Richard L., 4,119,678, Cl. 260-677.00A.
Peters, Kenneth D.; Veinerman, Elliot; and Felch, Donald E., 4,119,526, Cl. 208-64.000.
Peters, Kenneth D., 4,119,527, Cl. 208-64.000.
Ryu, Ji-Yong, 4,119,675, Cl. 260-672.00T.
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Ryu, Ji-Yong, 4,119,677, Cl. 260-672.00T.
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Bundy, Gordon L., 4,119,649, Cl. 260-408.000.
Bundy, Gordon L., 4,119,663, Cl. 562-503.000.
Bundy, Gordon L., 4,119,666, Cl. 260-563.00R.
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Morton, Douglas Ross, Jr., 4,119,672, Cl. 562-503.000.
Peterson, David C., 4,119,785, Cl. 560-53.000.
Peterson, David C., 4,119,786, Cl. 560-53.000.
Schneider, William P., 4,119,648, Cl. 260-405.000.
Schneider, William P., 4,119,650, Cl. 260-408.000.
Smith, Herman W., 4,119,662, Cl. 562-503.000.
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Yankee, Ernest W., 4,119,651, Cl. 260-408.000.
Yankee, Ernest W., 4,119,787, Cl. 560-121.000.
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Usui, Hideo; Ishige, Sadao; and Saeki, Keiso, to Fuji Photo Film Co., Ltd. Thiazine production. 4,119,777, Cl. 544-6.000.
Utasi, Joseph G.: *See*—
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Vachon, Raymond N., to Eastman Kodak Company. Copolyesters as improved binders and finishes for polyester-containing fabrics. 4,119,680, Cl. 260-850.000.
Vainerman, Efim Semenovich: *See*—
Rogozhin, Sergei Vasilievich; Vainerman, Efim Semenovich; Burmistrova, Ljubov Mikhailovna; Davidovich, Jury Alexandrovich; Ryashentsev, Vladimir Jurievich; Kulakova, Valentina Kirillovna; Lagunov, Lev Lvovich; and Bykov, Vladimir Petrovich, 4,119,619, Cl. 260-112.00R.
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Vallejos, Tony E., to Alto Automotive, Inc. Rotary valve system for motors and the like having improved sealing means. 4,119,077, Cl. 123-188.00B.
Van Allan, James Albert; Cunningham, Michael Paul; Specht, Donald Paul; and Farid, Samir Yacoub, to Eastman Kodak Company. Sensitizers for photocrosslinkable polymers. 4,119,466, Cl. 96-115.00R.
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van den Bosch, Steven; Kettenes, Dirk Karel; de Roos, Kris Bart; Sipma, Gerben; and Stoffelsma, Jan, to P.F.W. Beheer B.V. Sulfur-containing flavoring agents. 4,119,737, Cl. 426-535.000.
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van Eekelen, Alex H. A. M.: *See*—
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van Zeggelaar, Gerrit Hendrik, to Bagger en Grond (Amsterdam Ballast Dredging) Ballast-Nedam Groep N. V.; and Amsterdamse Ballast B.V. Method and device for measuring a pressure in a suspension conduit. 4,118,990, Cl. 73-714.000.
Varadi, Andrew G., to National Semiconductor Corporation. Quasi-static MOS memory array with standby operation. 4,120,047, Cl. 365-227.000.
Varney, John Charles: *See*—
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Veazey, Thomas M., to Monsanto Company. Method for applying a finish to a tow. 4,119,747, Cl. 427-424.000.
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Venable, Phillip G., to J. I. Case Company. Remote control assembly. 4,119,000, Cl. 74-479.000.

Verbauwhede, Germain; and Coopman, Frans, to N. V. Bekaert S.A. Steel cord reinforced plastic materials. 4,119,748, Cl. 428-36.000.

Verbeke, Henry. Method of securing a commodity in a plastic bag. 4,118,912, Cl. 53-469.000.

Verdenne, Serge J. C.: *See—*
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Verdu, Vicente Mira. Fall arrester, for building works. 4,119,176, Cl. 182-138.000.

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Thome, Roland; Bings, Hubert; and Obermaier, Hans, 4,119,707, Cl. 423-592.000.
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Verlinden, Willy Gommaire; and Marien, Jozef Eduard, to AGFA-Gevaert N.V. Radiography. 4,119,849, Cl. 250-315.00A.

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Versitron, Inc.: *See—*
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Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich. Adhesive. 4,119,681, Cl. 260-859.00R.

Vesely, Ernst, to Purdue Frederick Company, The. Settling container. 4,119,544, Cl. 210-515.000.

Vickers, Charles K.; and Vickers, Patricia A. Muzzle rest. 4,118,880, Cl. 42-94.000.

Vickers, Patricia A.: *See—*
Vickers, Charles K.; and Vickers, Patricia A., 4,118,880, Cl. 42-94.000.

Victor Company of Japan, Limited: *See—*
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Vilnjussky Inzhenerno-Stroitelny Institut: *See—*
Kavolelis, Antanas-Pyatras Kazimero; Spruogis, Bronislavas Prano; Turenko, Oleg Borisovich; Krupich, Vladimir Vladimirovich; Sakalauskas, Valerienas Antano; and Yakshtas, Arunas Romualdo, 4,118,953, Cl. 64-12.000.

Vinals, Joaquin: *See—*
Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.

Vinals, Joaquin F.: *See—*
Light, Kenneth K.; Spencer, Bette M.; Vinals, Joaquin F.; Kiwala, Jacob; Vock, Manfred Hugo; and Shuster, Edward J., 4,119,574, Cl. 252-522.000.

Vlastelica, Daniel L.: *See—*
Sansur, Musa M.; Vlastelica, Daniel L.; and Delea, Anne C., 4,119,401, Cl. 23-230.00B.

Vock, Manfred Hugo: *See—*
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Light, Kenneth K.; Sanders, James Milton; Vock, Manfred Hugo; Shuster, Edward J.; Vinals, Joaquin; Schreiber, William L.; Hall, John B.; Hruza, Denis E., Sr.; Kamath, Venkatesh; Mookherjee, Braja Dulal; Tseng, Ching Y.; and Sprecker, Mark A., 4,119,577, Cl. 252-522.000.
Sprecker, Mark A.; Vock, Manfred Hugo; Schmitt, Frederick Louis; Hall, John B.; and Sanders, James Milton, 4,119,576, Cl. 252-522.000.

Vogtmann, Lothar; Braun, Martin; and Kregl, Josef, to Schloemann-Siemag Aktiengesellschaft. Strip pinch roll apparatus. 4,119,256, Cl. 226-177.000.

Voinescu, Nicolae: *See—*
Lendi, Georges; Voinescu, Nicolae; and De Trey, Rene, 4,118,867, Cl. 33-164.00C.

Volkswagenwerk Aktiengesellschaft: *See—*
Saridakis, Nikolaus, 4,119,771, Cl. 429-178.000.

Vollkommer, Norbert; Schade, Gerhard; Petersen, Egon Norbert; Bier, Gerhard; Klinkenberg, Herbert; and Schmidt, Werner, to Dynamit Nobel Aktiengesellschaft. Polymeric and oligomeric formals. 4,119,612, Cl. 528-232.000.

von Daehne, Welf; and Rasmussen, Poul Rodbroe, to Leo Pharmaceutical Products Ltd. A/S Lovens Kemiske Fabrik Produktionsaktieselskab. 16-S-acyl derivatives of fusidic acid. 4,119,717, Cl. 424-238.000.

Von Schenk, Wolf-Rudiger: *See—*
Unger, Eberhard; and Von Schenk, Wolf-Rudiger, 4,118,938, Cl. 405-145.000.

Voronin, Nikolai Sergeevich: *See—*
Fridman, Georgy Nikolaevich; Vasiliev, Jury Nikolaevich; Fialkov, Abram Samoilovich; Sosedov, Vladimir Petrovich; Tarasov, Alexandr Andreevich; Davidovich, Yakov Gilievich; Voronin, Nikolai Sergeevich; Shirokov, Alexei Gavrilovich; Sokolovsky, Alexandr Iudovich; Kozyrev, Anatoly Alexandrovich; Berlizova, Roza Petrovna; Kozlov, Evgeny Mikhailovich; Boiko, Anatoly Alexeevich; Gusev, Andrei Nikolaevich; Kazakova, Olga Borisovna; Fugol, Valery Alexeevich; Kalinina, Nadezhda Vasilievna; Emelyanova, Valentina Mikhailovna; Gluskin, Abram Yakovlevich, deceased; and Gluskin, Boris Abramovich, administrator, 4,119,572, Cl. 252-506.000.

Voxson S.p.A.: *See—*
Maddaloni, Ciro, 4,119,915, Cl. 325-452.000.

Vroom, Henry J.: *See—*
Knowles, Gregory W.; Sangesland, Odd E.; Vroom, Henry J.; and Madey, Robert W., 4,119,085, Cl. 126-271.000.

Vsesojuzny Nauchno-Issledovatelsky Proektno-Konstruktorsky i Tekhnologichesky Institut Elektrosvarochnogo Oborudovania: *See—*
Bykhovsky, David Grigorievich; Bolotnikov, Arkady Leonidovich; Strepetov, Gennady Egorovich; and Danilov, Alexandr Ivanovich, 4,119,828, Cl. 219-121.00P.

W & G Instruments, Inc.: *See—*
Beckmann, Uwe L.; and Osterland, Edmund, 4,119,839, Cl. 235-145.00R.

W. H. Porter, Inc.: *See—*
Porter, William Hunt, 4,119,750, Cl. 428-105.000.

W. R. Grace & Co.: *See—*
Bleyle, Merrill, 4,119,746, Cl. 427-381.000.
Grable, Ronald C., 4,119,075, Cl. 123-146.50A.
Isgur, Irving E.; Alexander, Robert R.; and Moy, Thomas P., 4,119,602, Cl. 260-29.6NR.
Rex, John Walter, 4,119,403, Cl. 23-232.00R.

Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Jacob, Herbert; Blatte, Michael; and Kremser, Fritz, 4,119,704, Cl. 423-299.000.

Wada, Akira: *See—*
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Waggoner, James A., to Schlumberger Technology Corporation. Calibrator for radioactivity well logging tools. 4,119,847, Cl. 250-252.000.

Wagner, Hans; and Maierhofer, Alfred, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Sweet material. 4,119,738, Cl. 426-548.000.

Wahl Clipper Corporation: *See—*
Sandy, Julius W., 4,118,863, Cl. 30-195.000.

Wahlig, Helmut: *See—*
Gottschlich, Rudolf; Rogalski, Werner; Bergmann, Rolf; Steinigeweg, Rosmarie; and Wahlig, Helmut, 4,119,631, Cl. 260-295.00A.

Wahnschaff, Paul. Glue applicator roll assembly. 4,119,057, Cl. 118-203.000.

Waite, Richard G., to S. B. Foot Tanning Company. Hide processing machine and method. 4,118,959, Cl. 69-30.000.

Wakasa, Isao: *See—*
Shono, Hiroaki; Noji, Toshio; Ishikawa, Shinzo; and Wakasa, Isao, 4,119,420, Cl. 65-1.000.

Walker, Francis H.: *See—*
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Wallace, Carl J.: *See—*
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Walter Kidde & Company, Inc.: *See—*
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Patel, Ramesh P., 4,119,118, Cl. 137-594.000.

Walter, Lothar: *See—*
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Walther, Carl Kurt; Walther, Henning D.; Hagelueken, Hubert P.; and Temme, Karl, to Wheelabrator-Frye Inc. Apparatus for surface treatment of parts with a vibratory container. 4,118,896, Cl. 51-163.200.

Walther, Henning D.: *See—*
Walther, Carl Kurt; Walther, Henning D.; Hagelueken, Hubert P.; and Temme, Karl, 4,118,896, Cl. 51-163.200.

Ward, Achard L.; and Ward, John A., to Ward Industries, Inc. Traction wheel motion sensor. 4,119,055, Cl. 116-74.000.

Ward, Ernest Michael; Ward, Steven M.; and Dils, Michael A. Remote meter reading system. 4,119,948, Cl. 340-151.000.

Ward Industries, Inc.: *See—*
Ward, Achard L.; and Ward, John A., 4,119,055, Cl. 116-74.000.

Ward, John A.: *See—*
Ward, Achard L.; and Ward, John A., 4,119,055, Cl. 116-74.000.

Ward, Steven M.: *See—*
Ward, Ernest Michael; Ward, Steven M.; and Dils, Michael A., 4,119,948, Cl. 340-151.000.

Warner, Albert E.: *See—*
Curvino, Salvatore J.; and Warner, Albert E., 4,118,926, Cl. 60-39.060.

Warner, Harlow L.: *See—*
Johnson, Wayne O.; Warner, Harlow L.; and Yih, Roy Y., 4,119,667, Cl. 260-566.00F.

Warringa, Jozef Johannus Maria; and Piepers, Harry, to U.S. Philips Corporation. Amplifier device for transmitting tetrode. 4,119,921, Cl. 330-49.000.

Watahiki, Minoru: *See—*
Itoh, Kenichi; Shinbo, Katsutoshi; and Watahiki, Minoru, 4,119,489, Cl. 176-76.000.

Watanabe, Akinori; and Shinozuka, Katsumasa, to Oki Electric Industry Co., Ltd. Method and apparatus for inserting intermediate dots in a dot matrix using a dot printer. 4,119,383, Cl. 400-124.000.

Watanabe, Masanori: *See*—
Koyama, Mitsuo; Nemoto, Ichiro; Onda, Eiichi; Nakagawa, Tadashi; and Watanabe, Masanori, 4,119,986, Cl. 354-258.000.
Watanabe, Nobuyoshi: *See*—
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Watanabe, Terumi: *See*—
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.
Watanabe, Tomoyoshi; Yasui, Tsuneo; Ishikawa, Shigeo; and Okada, Kiyomichi, to Brother Kogyo Kabushiki Kaisha. Ribbon changing mechanism for a typewriter. 4,119,385, Cl. 400-215.300.
Watkins, Bernard. Fishhook and releasing tool therefor. 4,118,883, Cl. 43-43.160.
Watson, David John: *See*—
Boyd, Violet; Fishwick, Brian Ribbons; and Watson, David John, 4,119,624, Cl. 260-207.100.
Watts, Eric Alfred, to Beecham Group Limited. 4-Amino-6-nitro derivatives of 2H-3,4-dihydrobenzo[b]pyrans. 4,119,643, Cl. 260-345.200.
Wauk, Michael T., II: *See*—
Weglein, Rolf D.; and Wauk, Michael T., II, 4,119,934, Cl. 333-30.00R.
Wavin B.V.: *See*—
de Putter, Warner Jan, 4,119,122, Cl. 138-103.000.
Wax, Franz, to Siemens Aktiengesellschaft. Leakproof ink supply reservoir. 4,119,034, Cl. 101-366.000.
Weatherhead Company, The: *See*—
Patel, Hiralal V., 4,118,970, Cl. 72-402.000.
Webb, Edward Harry: *See*—
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Webb, Robert L.: *See*—
Lewis, Joseph J.; and Webb, Robert L., 4,119,781, Cl. 548-337.000.
Wedemeyer, Karlfried: *See*—
Bauer, Kurt; Molleken, Reiner; Fiege, Helmut; and Wedemeyer, Karlfried, 4,119,671, Cl. 260-600.00R.
Weglein, Rolf D.; and Wauk, Michael T., II, to Hughes Aircraft Company. Bulk acoustic wave delay line. 4,119,934, Cl. 333-30.00R.
Wegmann, Helmut: *See*—
Moser, Kurt; Wegmann, Helmut; and Weigele, Reinhold, 4,119,059, Cl. 118-644.000.
Wehrenberg, Thomas M.: *See*—
Brashear, Otto S., Jr.; Hund, Clifford L.; and Wehrenberg, Thomas M., 4,119,472, Cl. 106-57.000.
Weidler, Erhard Alfred. Stretching device. 4,118,834, Cl. 24-68.0TT.
Weigele, Reinhold: *See*—
Moser, Kurt; Wegmann, Helmut; and Weigele, Reinhold, 4,119,059, Cl. 118-644.000.
Weigl, William. Bridge game for two or three. 4,119,322, Cl. 273-293.000.
Weiland, Richard J. Device for skinning animals and fowl. 4,118,830, Cl. 17-21.000.
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Porter, Stuart M.; Litty, Francis Edward; Weimer, Ervin C.; and Pollack, Eric G., 4,119,534, Cl. 209-291.000.
Weitz, Hans-Martin; Fischer, Rolf; and Broecker, Franz Josef, to BASF Aktiengesellschaft. Manufacture of 6-aminocaproamide. 4,119,665, Cl. 260-561.00A.
Welch, Stephen A. Electric water heater. 4,119,833, Cl. 219-285.000.
Wellington, Scott L., to Shell Oil Company. Enzyme-filtration clarification of xanthan gum polymer solution. 4,119,491, Cl. 195-7.000.
Wempe, Lawrence K.: *See*—
Bakule, Ronald D.; Gill, R. A.; and Wempe, Lawrence K., 4,119,600, Cl. 260-29.6RW.
Wernau, William C., to Pfizer Inc. Process for producing Xanthomonas hydrophilic colloid, product resulting therefrom, and use thereof in displacement of oil from partially depleted reservoirs. 4,119,546, Cl. 252-8.55D.
Werner, Dietrich; Schymura, Konrad; Georgi, Hans; Pech, Walter; and Lange, Wilhelm, to Metallgesellschaft Aktiengesellschaft. Temperature measuring device for rotary kilns. 4,118,986, Cl. 73-351.000.
West Electric Co., Ltd.: *See*—
Iwata, Hiroshi; and Yamaoka, Tetsuo, 4,119,988, Cl. 354-289.000.
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Western Electric Company, Inc.: *See*—
Boyer, John A.; Cross, Robert; Kovacs, Ernest; and Valentino, Ralph J., 4,119,211, Cl. 214-1.0BH.
Flemming, John Peter Wilfred, 4,119,212, Cl. 214-1.0CM.
Westinghouse Electric Corp.: *See*—
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Snedden, William H., 4,120,014, Cl. 361-196.000.
Wien, Raymond E.; Cotton, John F.; and Salemi, Nicholas A., 4,119,935, Cl. 335-167.000.
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Wheelabrator-Frye Inc.: *See*—
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Wheeler, Keith A.; and Hastings, Dawson W., to Allis-Chalmers Corporation. Implement frame with caster wheel and lock therefor. 4,119,156, Cl. 172-386.000.
Whirlpool Corporation: *See*—
Elders, Alvin J., 4,119,027, Cl. 100-215.000.
Johnson, Philip P.; and Lampman, William T., 4,119,116, Cl. 137-387.000.
Khan, Aman Ullah, 4,119,028, Cl. 100-218.000.
Marcussen, Henry, 4,118,957, Cl. 68-17.00A.
Whitaker, Johnny B., Jr. Weapon safety receptacle. 4,119,199, Cl. 206-317.000.
White, Allen Andrew, to Hesston Corporation. Baler apparatus. 4,118,918, Cl. 56-341.000.
White, Eugene B.; and Sharma, Mahindar N. Method of sanitizing a volume of water in conjunction with chlorine. 4,119,535, Cl. 210-62.000.
White, Harry B. Refuse crusher. 4,119,024, Cl. 100-35.000.
Whitefield, John Thomas, to Allen Organ Company. Continuously variable attack and decay delay for an electronic musical instrument. 4,119,006, Cl. 84-1.130.
Whitman, Robert Henry; and Barber, William Austin, to American Cyanamid Company. Microcrystalline cellulose as extrusion aid/-combustible filler for alumina. 4,119,474, Cl. 106-65.000.
Whittle, John Edward, to International Nickel Company, Inc., The. Production of perforated metal foil. 4,119,514, Cl. 204-206.000.
Widener, Charles D. Protective case. 4,119,195, Cl. 206-204.000.
Wiechert, Rudolf: *See*—
Schulze, Paul-Eberhard; Speck, Ulrich; Bittler, Dieter; Wiechert, Rudolf; and Acksteiner, Bernard, 4,119,626, Cl. 260-239.55C.
Wieland, Peter, to Ciba-Geigy Corporation. Process for the manufacture of 6β,7-methylene-3-oxo-4-ene steroids. 4,119,627, Cl. 260-239.570.
Wien, Raymond E.; Cotton, John F.; and Salemi, Nicholas A., to Westinghouse Electric Corp. Circuit interrupter including low friction latch. 4,119,935, Cl. 335-167.000.
Wilbur Chocolate Company, Inc.: *See*—
Crespo, Silvio, 4,119,740, Cl. 426-631.000.
Wilcox, David Mark; and Corkhill, Robert Edward, to English Electric Valve Company Limited. Electronic valves. 4,119,880, Cl. 313-348.000.
Wiley, Donald E., to Air Products and Chemicals, Inc. Particular metallurgical hot topping compositions and method of use. 4,119,468, Cl. 106-38.220.
Wilfinger, Raymond John: *See*—
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Wilhelm Hegenscheidt GmbH: *See*—
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Wilkins, John Thomas: *See*—
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Wilkins, Paul E.; Neville, Glenn E.; and Fitzgerald, Robert T., to United States of America, Army. Fuze system. 4,119,039, Cl. 102-214.000.
Will Ross, Inc.: *See*—
Bennett, James A., 4,119,264, Cl. 229-15.000.
Willard, Lars-Olof: *See*—
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Williams, Ralph P., to Phillips Petroleum Company. Photocurable diisocyanate compositions. 4,119,510, Cl. 204-159.230.
Williams, Robert Franklin, Jr.; and Lu, Chen-i, to Eastman Kodak Company. Method for manufacture of laminates which are useful as packaging materials. 4,119,479, Cl. 156-272.000.
Wilson, Frank: *See*—
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Wilson, Jack K.; and Wilson, Robert S. Adjustable type arrow rest for a bow. 4,119,078, Cl. 124-41.00A.
Wilson, James C.: *See*—
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Wilson, Phillip Steven: *See*—
Holub, Fred Frank; and Wilson, Phillip Steven, 4,119,603, Cl. 260-32.60R.
Wilson, Robert S.: *See*—
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Wings, Leo: *See*—
Grewe, Franz Josef; Rosler, Heinz; Ruhl, Oskar; Stenke, Klaus; Van Wersch, Egidius; and Wings, Leo, 4,119,877, Cl. 313-318.000.
Winkelvoss, Dieter, to Dresser Europe S.A. "LeSouverain" Boulevard du Souverain. Valve means of a device for removing lubricating oil. 4,119,117, Cl. 137-456.000.
Winkhaus, Gunther: *See*—
Zimmer, Erich; Nafissi, Ahmad; and Winkhaus, Gunther, 4,119,698, Cl. 423-82.000.
Winter, Donald C.: *See*—
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Wintgens, James C.: *See*—
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Wittkopp, Helmut; and Lison, Achim, to Wilhelm Hegenscheidt

GmbH. Method of and machine for reprofiling a railroad-car wheel. 4,119,001, Cl. 82-1.00C.

Witzel, Bruce E.: *See—*
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Wolf, Cecil R., to Carter, Dwight. Insulated garage door. 4,119,133, Cl. 160-209.000.

Wolf, Erich: *See—*
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Wolfe, Roger M., to Harnischfeger Corporation. Roof window for crane operator's cab. 4,119,340, Cl. 296-137.00B.

Wolfrum, Gerhard: *See—*
Hugl, Herbert; Otten, Hans-Gunter; Sommer, Richard; and Wolfrum, Gerhard, 4,119,623, Cl. 260-206.000.

Wollert, Walter C., to Technology Development Corporation. Voice operated switch having an activation level which is higher than its sustaining level. 4,119,797, Cl. 179-1.0VC.

Woltermann, Jay R.: *See—*
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Wong, Theodore T. S., to United States of America, Army. Flipped method for characterization of epitaxial layers. 4,118,857, Cl. 29-574.000.

Woo, James T. K.; and Evans, James M., to SCM Corporation. Cathodic electrocoating compositions containing acid-functional aminoplast and flexibilized, epoxy-free, aminated resin. 4,119,599, Cl. 260-29.40R.

Wood, Ralph R., to Wyle Laboratories. Locking mechanism. 4,118,989, Cl. 73-487.000.

Woodman, Daniel Wayne, Jr.; and Vancelette, Stanley Robert, to USM Corporation. Component sequence verifier. 4,119,206, Cl. 209-548.000.

Woodward, Clifford Stanley; and McMurtry, David Roberts, to Rolls-Royce Limited. Bevel gearing. 4,118,997, Cl. 74-417.000.

Wootton, Gordon, to Beecham Group Limited. Cyclic exo amides. 4,119,726, Cl. 424-274.000.

Wright, John B.: *See—*
Hall, Charles M.; and Wright, John B., 4,119,783, Cl. 560-43.000.

Wu, Chester C.: *See—*
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Wu, Ching H.; Brown, Alfred; and Hall, Wilbur L., to Texaco Inc. Recovering petroleum from subterranean formations. 4,119,149, Cl. 166-266.000.

Wurmb, Rolf: *See—*
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Wyburn-Mason, Roger, to Simoons, John R. A. Treatment of rheumatoid arthritis and related diseases. 4,119,723, Cl. 424-273.00R.

Wychnanek, Rainer: *See—*
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Wysong, Robert David, to Du Pont de Nemours, E. I., and Company. Polyvinyl alcohol compositions for use in the preparation of water-soluble films. 4,119,604, Cl. 260-33.20R.

Xerox Corporation: *See—*
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Hamaker, Ralph A., 4,119,307, Cl. 271-174.000.
Hamaker, Ralph A., 4,119,308, Cl. 271-174.000.
Nelson, Kyler Fischer, 4,119,840, Cl. 250-211.00R.
Quinn, Halsey P., 4,119,907, Cl. 323-105.000.

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Yaffe, Roberta, to Texaco Inc. Synthetic aircraft turbine lubricating oil compositions. 4,119,551, Cl. 252-46.700.

Yakshtas, Arunas Romualdo: *See—*
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Yamada, Shinichi; and Komatsu, Shigeru, to Asano Gear Co., Ltd. Steering drive axle assembly. 4,119,167, Cl. 180-43.00R.

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Nishida, Fusao; Matsuoka, Hiroo; Yamada, Tomiaki; and Sato, Goro, 4,119,568, Cl. 252-437.000.
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.

Yamada, Yutaka; Kato, Akira; and Uchida, Tohru, to Konishiroku Photo Industry Co., Ltd. Photosensitive material for electrophotography comprising a silicon oil. 4,119,461, Cl. 96-1.800.

Yamagishi, Hiroaki, to Ono Seiko Co., Ltd. Clutch mechanism for push-button tuner. 4,118,992, Cl. 74-10.330.

Yamaguchi, Seiichi, to Koito Manufacturing Company Limited. Continuous electroplating apparatus. 4,119,516, Cl. 204-224.00R.

Yamamoto, Yukio, to Yoshida Kogyo K.K. Door hinge attachment device. 4,118,827, Cl. 16-137.000.

Yamanoshita, Makoto: *See—*
Tsuchihashi, Michihiro; Saito, Masato; Yamanoshita, Makoto; Katsura, Hidetoshi; Maeyama, Koichiro; Uchida, Yasushi; and Myodo, Osamu, 4,120,026, Cl. 362-231.000.

Yamaoka, Mikio; Hayashida, Yukio; Korekawa, Takashi; and Nibu, Toshiharu, to Matsushita Electric Industrial Company, Limited. Centrifugal separator. 4,119,542, Cl. 210-360.00A.

Yamaoka, Tetsuo: *See—*
Iwata, Hiroshi; and Yamaoka, Tetsuo, 4,119,988, Cl. 354-289.000.

Yamashita, Maki: *See—*
Imura, Toshinori; and Yamashita, Maki, 4,119,982, Cl. 354-155.000.

Yamauchi, Tadashi; Akune, Mikio; and Kouchi, Susumo, to Nittetu Chemical Engineering Ltd. Treatment of waste liquid and apparatus therefor and a fertilizer composition obtained thereby. 4,119,538, Cl. 210-67.000.

Yamazaki, Toru, to Citizen Watch Co. Ltd. Elastomer display device. 4,119,368, Cl. 350-360.000.

Yanagihara, Tsutomu: *See—*
Nishida, Fusao; Yamada, Tomiaki; Suzuki, Noriyuki; Takeda, Takehiko; Yanagihara, Tsutomu; Adachi, Katsuhiko; Asanabe, Tadashi; Ohsato, Katuaki; and Tsuda, Kintaro, 4,119,703, Cl. 423-239.000.

Yanagishima, Takayuki; and Inoue, Naohiko, to Nissan Motor Company, Ltd. Steering force control system. 4,119,172, Cl. 180-141.000.

Yankee, Ernest W., to Upjohn Company, The. Cis-13-PGA_2 analogs. 4,119,651, Cl. 260-408.000.

Yankee, Ernest W., to Upjohn Company, The. 11-Deoxy-cis-13-PGE_2 analogs. 4,119,787, Cl. 560-121.000.

Yano, Tetsuo: *See—*
Iguchi, Shigeru; Iwata, Tamotu; and Yano, Tetsuo, 4,119,463, Cl. 96-67.000.

Yasuda, Takeru: *See—*
Mitsuda, Tadao; Yasuda, Takeru; and Okuda, Sigeru, 4,118,976, Cl. 73-118.000.

Yasui, Tsuneo: *See—*
Watanabe, Tomoyoshi; Yasui, Tsuneo; Ishikawa, Shigeo; and Okada, Kiyomichi, 4,119,385, Cl. 400-215.300.

Yatomi, Tadashi: *See—*
Matsubara, Kiyoshi; Nomura, Yuichi; Yatomi, Tadashi; Hamamura, Tadashi; Noda, Isao; Watanabe, Terumi; Nomura, Takao; and Sakata, Isao, 4,119,582, Cl. 521-112.000.

Yen, Chia-Ming; and Schmatz, Duane J., to Ford Motor Company. Method of joining metal, particularly aluminum or aluminum alloys, using bromine fluxing agent. 4,119,262, Cl. 228-206.000.

Yeomans, Bertram: *See—*
Cane, Charles; and Yeomans, Bertram, 4,119,553, Cl. 560-198.000.

Yeschick, Waldemar, to Mohawk Data Sciences Corp. Timesharing programmable display system. 4,119,953, Cl. 340-324.0AD.

Yih, Roy Y.: *See—*
Johnson, Wayne O.; Warner, Harlow L.; and Yih, Roy Y., 4,119,667, Cl. 260-566.00F.

Yoerger, William E., to Eastman Kodak Company. π-Deficient N-heteroaromatic chemical sensitizers for heterogeneous organic photoconductor compositions and methods. 4,119,460, Cl. 96-1.0PC.

Yokota, Noriyuki; Tokuda, Shingo; Ito, Yoshiro; and Itaya, Kenji, to Osaka Soda Co. Ltd. Method of purifying the raw brine used in alkali salt electrolysis. 4,119,508, Cl. 204-128.000.

Yokozato, Junichi: *See—*
Ando, Yoshikazu; and Yokozato, Junichi, 4,119,985, Cl. 354-223.000.

Yonekura, Atsuo: *See—*
Yoshitomi, Masahide; and Yonekura, Atsuo, 4,119,053, Cl. 115-35.000.

Yoneya, Kiyoo: *See—*
Kando, Akiyoshi; and Yoneya, Kiyoo, 4,118,839, Cl. 24-205.10R.

Yoshida Kogyo K.K.: *See—*
Kando, Akiyoshi; and Yoneya, Kiyoo, 4,118,839, Cl. 24-205.10R.
Yamamoto, Yukio, 4,118,827, Cl. 16-137.000.

Yoshida, Takashi: *See—*
Arii, Hiroshi; Kawada, Hirohito; Yoshida, Takashi; and Nonaka, Chiaki, 4,120,019, Cl. 361-385.000.

Yoshitomi, Masahide; and Yonekura, Atsuo, to Kabushiki Kaisha Komatsu Seisakusho. Steering mechanism for inboard-outboard marine drive. 4,119,053, Cl. 115-35.000.

Yoshizawa, Shigeru: *See—*
Kasai, Masuo; Yoshizawa, Shigeru; and Hiroshima, Minoru, 4,120,042, Cl. 365-2.000.

Youngstown Sheet and Tube Company: *See—*
Bosch, Richard A.; and Straatmann, John A., 4,119,445, Cl. 148-36.000.

Yuki, Mikio: *See—*
Fujioka, Hisatake; Umemoto, Tomeo; Shingaki, Masamitsu; Yuki, Mikio; Sato, Mitsuhiro; and Kawabata, Shosuke, 4,119,183, Cl. 192-24.000.

Zabela, Konstantin Alexeevich: *See—*
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.

(Zaidanhojin) Sagami Chemical Research Center: *See—*
Isowa, Yoshikazu; Ohmori, Muneki; Kurita, Hideaki; Ichikawa, Tetsuya; Sato, Masanari; and Mori, Kaoru, 4,119,493, Cl. 195-29.000.

Zajac, Cyril. Eyepiece. 4,119,984, Cl. 354-219.000.

Zbryski, William P.: *See—*
Lukac, Frederick S.; and Zbryski, William P., 4,119,109, Cl. 134-64.00R.

Zeh, Horst, to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen mbH. Device for taking liquid samples. 4,118,987, Cl. 73-422.00R.

Zenith Radio Corporation: *See*—
Blumenberg, Horst H.; and Guzowski, Kenneth A., 4,119,884, Cl. 313-417.000.

Zenza Bronica Industries, Inc.: *See*—
Ando, Yoshikazu; and Yokozato, Junichi, 4,119,985, Cl. 354-223.000.

Zhukovsky, Sergei Semenovich: *See*—
Teplyakov, Sergei Dmitrievich; Zhukovsky, Sergei Semenovich; Lyass, Abram Moiseevich; Belyakova, Zoya Vasilievna; Pomerantseva, Maiya Grigorievna; Tsygankova, Nina Yakovievna; and Krol, Mira-Ljudmila Solomonovna, 4,119,606, Cl. 260-38.000.

Zibert, Klaus, to Siemens Aktiengesellschaft. Read-out amplifier circuit for a dynamic MOS memory. 4,119,870, Cl. 307-355.000.

Zibert, Klaus, to Siemens Aktiengesellschaft. Function generator for the production of a voltage across a node to which are connected flip-flops which are arranged in bit lines of a MOS memory and consists of MOS transistors. 4,119,871, Cl. 307-355.000.

Ziegelmeyer, Harold R. Pusher lug aligning devices. 4,118,872, Cl. 33-181.00R.

Zimmer Aktiengesellschaft: *See*—
Lobering, Joachim, 4,119,611, Cl. 528-139.000.

Zimmer, Erich; Nafissi, Ahmad; and Winkhaus, Gunther, to Kernforschungsanlage Julich, Gesellschaft mit beschrankter Haftung; and Vereinigte Aluminum-Werke Aktiengesellschaft. Reclamation treatment of red mud. 4,119,698, Cl. 423-82.000.

Zindler, Jerrold, to Sanders Associates, Inc. Optical detection and ranging apparatus. 4,119,379, Cl. 356-4.000.

Znachkov, Jury Konstantinovich: *See*—
Veselovsky, Roman Alexandrovich; Lipatova, Tatyana Esperovna; Kimgir, Raisa Alexandrovna; Znachkov, Jury Konstantinovich; Pyanykh, Dmitry Maximovich; Shmanov, Nuribek Nabievich; Trifonov, Nikolai Dmitrievich; and Zabela, Konstantin Alexeevich, 4,119,681, Cl. 260-859.00R.

Zoulalian, Jacques: *See*—
Auroy, Michel; Goharel, Maurice; and Zoulalian, Jacques, 4,119,645, Cl. 260-346.400.

Zutaut, Chesley L.: *See*—
Brower, Loyd R., Jr.; Madsen, Leonard P.; and Zutaut, Chesley L., 4,119,522, Cl. 204-300.0EC.

Zwarts, Johan Martin Carol; and Koops, Geert, to Hollandse Signaalapparaten B.V. Coherent side-lobe suppressing unit for a pulse radar apparatus. 4,119,963, Cl. 343-17.2PC.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF OCTOBER, 1978

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Agusti, Agustin, to J. Uriach & Cia S.A. Triamcinolone acetonide derivative. Re. 29,799, Cl. 424-241.000.

Asada, Takeo: *See*—
Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, Re. 29,796, Cl. 194-4.00C.

El-Jay, Inc.: *See*—
Johnson, Louis W., Re. 29,798, Cl. 241-275.000.

Eyberger, Harry, to Vamco Machine and Tool, Inc. Self-contained feed roll for power punch presses. Re. 29,795, Cl. 83-245.000.

J. Uriach & Cia S.A.: *See*—
Agusti, Agustin, Re. 29,799, Cl. 424-241.000.

Johnson, Louis W., to El-Jay, Inc. Impact crusher. Re. 29,798, Cl. 241-275.000.

Mink, George. Material handling apparatus having gripping means for moving articles in several directions. Re. 29,797, Cl. 214-1.0BD.

Mizuta, Yukio: *See*—
Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, Re. 29,796, Cl. 194-4.00C.

Omron Tateisi Electronics Co.: *See*—
Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, Re. 29,796, Cl. 194-4.00C.

Tanaka, Toshio: *See*—
Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, Re. 29,796, Cl. 194-4.00C.

Vamco Machine and Tool, Inc.: *See*—
Eyberger, Harry, Re. 29,795, Cl. 83-245.000.

Yamamoto, Mititaka; Mizuta, Yukio; Tanaka, Toshio; and Asada, Takeo, to Omron Tateisi Electronics Co. Automatic credit loan machine. Re. 29,796, Cl. 194-4.00C.

LIST OF PLANT PATENTEES

Anderson, Frederic W., to Burchell Nursery, Inc., The. Nectarine tree (48-G-140). 4,314, 10-10-78, Cl. 41.000.

Burchell Nursery, Inc., The: *See*—
Anderson, Frederic W., 4,314, Cl. 41.000.

Highcroft Orchards: *See*—
Lowry, David B., 4,315, Cl. 36.000.

Lowry, David B., to Highcroft Orchards. Pear tree. 4,315, 10-10-78, Cl. 36.000.

Pan-American Plant Company: *See*—
Petusky, Kerry S., 4,311, Cl. 74.000.
Shoesmith, Leonard H., 4,312, Cl. 74.000.
Shoesmith, Leonard H., 4,313, Cl. 80.000.

Petusky, Kerry S., to Pan-American Plant Company. Chrysanthemum plant named Amber Concord. 4,311, 10-10-78, Cl. 74.000.

Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named Wolverine. 4,312, 10-10-78, Cl. 74.000.

Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named wildcat. 4,313, 10-10-78, Cl. 80.000.

LIST OF DESIGN PATENTEES

Adkinson, Joseph E. Armchair. 249,848, 10-10-78, Cl. D6-70.000.

Adkinson, Joseph E. Cocktail table. 249,857, 10-10-78, Cl. D6-175.000.

Adkinson, Joseph E. Cocktail table. 249,861, 10-10-78, Cl. D6-179.000.

American Express Company: *See*—
Lee, Robert E., 249,900, Cl. D31-22.000.

Anderka, Gerold; Reif, Ulrich; and Wolder, Herbert, to Koh-I-Noor Rapidograph, Inc. Stylographic pen. 249,887, 10-10-78, Cl. D19-43.000.

Arcair Company: *See*—
Rieppel, Perry J.; and Henderson, Harold R., 249,827, Cl. D2-232.000.

Armbruster, Verna Marie; and Hasbrouck, Betty Stratton. Facial muscle exerciser. 249,893, 10-10-78, Cl. D24-36.000.

Armstrong Cork Company: *See*—
Oleski, Ronald F., 249,895, Cl. D25-97.000.

Aul, Robert J.; Breno, Philip J.; Zitkus, Wayne J.; Watson, Barry; and Maguire, Paul R., to Owens-Illinois, Inc. Glucose analyzer. 249,892, 10-10-78, Cl. D24-21.000.

Avnet, Inc.: *See*—
Greenberg, Harry, 249,884, Cl. D14-86.000.

Baldini, Giovanni, to Carrara & Matta S.p.A. Towel holder. 249,854, 10-10-78, Cl. D6-99.000.

Barnes, James E., to Gillette Company, The. Writing instrument. 249,888, 10-10-78, Cl. D19-51.000.

Bastock, Tony William, to Foseco International Limited. Foundry riser sleeve. 249,886, 10-10-78, Cl. D15-135.000.

Bell Telephone Laboratories, Incorporated: *See*—
Genaro, Donald Michael; McGarvey, John Niel; and Sylvester, Gordon Elliot, 249,882, Cl. D14-61.000.

Bender, Keith N.: *See*—
Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 249,890, Cl. D23-97.000.

Blaser, John E.: *See*—
Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 249,890, Cl. D23-97.000.

Booth, Vernard S.; Coons, Everett A.; and Oswalt, Billy W., to Olinkraft, Inc. Box blank. 249,872, 10-10-78, Cl. D9-245.000.

Boucher, Joseph L.: *See*—
Defreitas, Richard E.; Mitchell, Peter W.; Tribeman, Peter D.; Wilensky, Samuel; and Boucher, Joseph L., 249,885, Cl. D14-96.000.

Brancaccio, Thomas J.; and Ragone, Bernardo P., to Vitamaster Industries, Inc. Steam cabinet housing. 249,894, 10-10-78, Cl. D24-37.000.

Breno, Philip J.: *See*—
Aul, Robert J.; Breno, Philip J.; Zitkus, Wayne J.; Watson, Barry; and Maguire, Paul R., 249,892, Cl. D24-21.000.

Bumbal, Paul; and Mizzi, John V. Ladder inclinometer. 249,875, 10-10-78, Cl. D10-69.000.

Cannon, Geoffrey N., to Geoffrey Cannon Enterprises, Inc. Lock securing device. 249,871, 10-10-78, Cl. D8-343.000.

Carrara & Matta S.p.A.: *See*—
Baldini, Giovanni, 249,854, Cl. D6-99.000.

Cartabiano, Michael C., to Child Guidance Playthings, Inc. Toy motorcycle. 249,903, 10-10-78, Cl. D34-15.0AN.

Chaires, George O. Combined feed trough and support. 249,898, 10-10-78, Cl. D30-16.000.

Child Guidance Playthings, Inc.: *See*—
Cartabiano, Michael C., 249,903, Cl. D34-15.0AN.

Chin America Corp.: *See*—
Tse, Jackson, 249,901, Cl. D34-5.0ST.

Chinn, Edna A.: *See*—
Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 249,890, Cl. D23-97.000.

Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., to Roger's Fireplace Shoppe, Inc. Wood burning stove with screen. 249,890, 10-10-78, Cl. D23-97.000.

Collins, Howard William, to International Rectifier Corporation. Solid state relay. 249,883, 10-10-78, Cl. D13-33.000.

Coons, Everett A.: *See*—
Booth, Vernard S.; Coons, Everett A.; and Oswalt, Billy W., 249,872, Cl. D9-245.000.

Daido Corporation: *See*—
Galazzo, Ray, 249,905, Cl. D96-12.00A.
DeAmicis, Ferdinando. Hydraulic line plug clamp unit. 249,889, 10-10-78, Cl. D23-40.000.
Defreitas, Richard E.; Mitchell, Peter W.; Tribeman, Peter D.; Wilensky, Samuel; and Boucher, Joseph L., to Hybrid Systems Corporation. Enclosure for high fidelity audio reproduction equipment. 249,885, 10-10-78, Cl. D14-96.000.
E.G.O. Elektro-Geraete Blanc und Fischer: *See*—
Fischer, Karl, 249,863, Cl. D7-121.000.
Felix, Ieuan Richard, to Lilly Industries, Ltd. Bottle. 249,866, 10-10-78, Cl. D9-130.000.
Fischer, Karl, to E.G.O. Elektro-Geraete Blanc und Fischer. Electric cooking plate with middle sensor. 249,863, 10-10-78, Cl. D7-121.000.
Foseco International Limited: *See*—
Bastock, Tony William, 249,886, Cl. D15-135.000.
Gageby, Steven Douglas. Chair. 249,828, 10-10-78, Cl. D6-56.000.
Gageby, Steven Douglas. Chair. 249,829, 10-10-78, Cl. D6-56.000.
Gageby, Steven Douglas. Chair. 249,830, 10-10-78, Cl. D6-56.000.
Gageby, Steven Douglas. Chair. 249,831, 10-10-78, Cl. D6-56.000.
Gageby, Steven Douglas. Chair. 249,832, 10-10-78, Cl. D6-56.000.
Gageby, Steven Douglas. Chair. 249,833, 10-10-78, Cl. D6-56.000.
Gageby, Steven Douglas. Chair. 249,834, 10-10-78, Cl. D6-56.000.
Gageby, Steven Douglas. Chair. 249,835, 10-10-78, Cl. D6-56.000.
Gageby, Steven Douglas. Chair. 249,837, 10-10-78, Cl. D6-67.000.
Gageby, Steven Douglas. Chair. 249,838, 10-10-78, Cl. D6-67.000.
Gageby, Steven Douglas. Chair. 249,839, 10-10-78, Cl. D6-67.000.
Gageby, Steven Douglas. Chair. 249,840, 10-10-78, Cl. D6-67.000.
Gageby, Steven Douglas. Chair. 249,841, 10-10-78, Cl. D6-67.000.
Gageby, Steven Douglas. Chair. 249,842, 10-10-78, Cl. D6-67.000.
Gageby, Steven Douglas. Chair. 249,843, 10-10-78, Cl. D6-69.000.
Gageby, Steven Douglas. Chair. 249,844, 10-10-78, Cl. D6-69.000.
Gageby, Steven Douglas. Chair. 249,845, 10-10-78, Cl. D6-69.000.
Gageby, Steven Douglas. Chair. 249,846, 10-10-78, Cl. D6-69.000.
Gageby, Steven Douglas. Chair. 249,847, 10-10-78, Cl. D6-69.000.
Gageby, Steven Douglas. Chair. 249,850, 10-10-78, Cl. D6-75.000.
Gageby, Steven Douglas. Chair. 249,851, 10-10-78, Cl. D6-75.000.
Gageby, Steven Douglas. Chair. 249,852, 10-10-78, Cl. D6-75.000.
Gageby, Steven Douglas. Chair. 249,853, 10-10-78, Cl. D6-75.000.
Gageby, Steven Douglas. Table. 249,858, 10-10-78, Cl. D6-177.000.
Galazzo, Ray, to Daido Corporation. Sign holder for use with perforated display board. 249,905, 10-10-78, Cl. D96-12.00A.
Genaro, Donald Michael; McGarvey, John Niel; and Sylvester, Gordon Elliot, to Bell Telephone Laboratories, Incorporated. Telephone stand. 249,882, 10-10-78, Cl. D14-61.000.
Geoffrey Cannon Enterprises, Inc.: *See*—
Cannon, Geoffrey N., 249,871, Cl. D8-343.000.
Gillette Company, The: *See*—
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Ginoulhiac, Francesco. Motor home. 249,881, 10-10-78, Cl. D12-100.000.
Glaby, Henry Gustaf Reinhold. Bib. 249,826, 10-10-78, Cl. D2-229.000.
Graham, Roger. Smoking device. 249,896, 10-10-78, Cl. D27-03.000.
Greenberg, Harry, to Avnet, Inc. Antenna. 249,884, 10-10-78, Cl. D14-86.000.
Hasbrouck, Betty Stratton: *See*—
Armbruster, Verna Marie; and Hasbrouck, Betty Stratton, 249,893, Cl. D24-36.000.
Henderson, Harold R.: *See*—
Rieppel, Perry J.; and Henderson, Harold R., 249,827, Cl. D2-232.000.
Hudson Oxygen Therapy Sales Company: *See*—
Rowland, Robert O.; and Ruksenas, Miguel A., 249,891, Cl. D24-17.000.
Hybrid Systems Corporation: *See*—
Defreitas, Richard E.; Mitchell, Peter W.; Tribeman, Peter D.; Wilensky, Samuel; and Boucher, Joseph L., 249,885, Cl. D14-96.000.
International Rectifier Corporation: *See*—
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Keryluk, Horace Ted: *See*—
Mackay, Frederick Gordon; and Keryluk, Horace Ted, 249,864, Cl. D7-122.000.
Knight, Willard C. Arm rest. 249,862, 10-10-78, Cl. D6-194.000.
Koh-I-Noor Rapidograph, Inc.: *See*—
Anderka, Gerold; Reif, Ulrich; and Wolder, Herbert, 249,887, Cl. D19-43.000.
Koret, Inc.: *See*—
Tillander, Thomas, 249,869, Cl. D9-224.000.
Tillander, Thomas, 249,870, Cl. D9-224.000.
Lawrence, William James, to Texas Instruments Incorporated. Digital wrist watch. 249,874, 10-10-78, Cl. D10-38.000.
Lee, Robert E., to American Express Company. Travelers check dispensing machine. 249,900, 10-10-78, Cl. D31-22.000.
Levell, Kevin Charles. Table. 249,855, 10-10-78, Cl. D6-148.000.
Levell, Kevin Charles. Circular table. 249,856, 10-10-78, Cl. D6-148.000.
Lilly Industries, Ltd.: *See*—
Felix, Ieuan Richard, 249,866, Cl. D9-130.000.
Mackay, Frederick Gordon; and Keryluk, Horace Ted, to Teledyne Industries, Inc. Warming tray. 249,864, 10-10-78, Cl. D7-122.000.
Maguire, Paul R.: *See*—
Aul, Robert J.; Breno, Philip J.; Zitkus, Wayne J.; Watson, Barry; and Maguire, Paul R., 249,892, Cl. D24-21.000.
Maxwell, David E.; Shaffer, James R.; and Radtke, Lee, to Sun Electric Corporation. Inductive clamp. 249,876, 10-10-78, Cl. D10-79.000.
McGarvey, John Niel: *See*—
Genaro, Donald Michael; McGarvey, John Niel; and Sylvester, Gordon Elliot, 249,882, Cl. D14-61.000.
Mitchell, Peter W.: *See*—
Defreitas, Richard E.; Mitchell, Peter W.; Tribeman, Peter D.; Wilensky, Samuel; and Boucher, Joseph L., 249,885, Cl. D14-96.000.
Mizzi, John V.: *See*—
Bumbal, Paul; and Mizzi, John V., 249,875, Cl. D10-69.000.
Monopoli, Daniel M. Automotive console tray. 249,904, 10-10-78, Cl. D87-1.00R.
Nally, Phillip L. Cross. 249,899, 10-10-78, Cl. D99-27.000.
New York Pencil Company, Inc.: *See*—
Reich, Michael, 249,867, Cl. D9-203.000.
Ofrex Group Limited: *See*—
Wright, Owen Mortimer, 249,865, Cl. D8-49.000.
Oleski, Ronald F., to Armstrong Cork Company. Ceiling tile or similar article. 249,895, 10-10-78, Cl. D25-97.000.
Olinkraft, Inc.: *See*—
Booth, Vernard S.; Coons, Everett A.; and Oswalt, Billy W., 249,872, Cl. D9-245.000.
Olko, Henry. Chair. 249,836, 10-10-78, Cl. D6-57.000.
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Booth, Vernard S.; Coons, Everett A.; and Oswalt, Billy W., 249,872, Cl. D9-245.000.
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Aul, Robert J.; Breno, Philip J.; Zitkus, Wayne J.; Watson, Barry; and Maguire, Paul R., 249,892, Cl. D24-21.000.
Peters-Revington Corporation: *See*—
Ungaro, Nicholas, 249,860, Cl. D6-179.000.
Radtke, Lee: *See*—
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Ragone, Bernardo P.: *See*—
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Reich, Michael, to New York Pencil Company, Inc. Dusting powder container. 249,867, 10-10-78, Cl. D9-203.000.
Reif, Ulrich: *See*—
Anderka, Gerold; Reif, Ulrich; and Wolder, Herbert, 249,887, Cl. D19-43.000.
Rieppel, Perry J.; and Henderson, Harold R., to Arcair Company. Welding helmet. 249,827, 10-10-78, Cl. D2-232.000.
Roger's Fireplace Shoppe, Inc.: *See*—
Chinn, Roger A.; Chinn, Edna A.; Blaser, John E.; and Bender, Keith N., 249,890, Cl. D23-97.000.
Rowland, Robert O.; and Ruksenas, Miguel A., to Hudson Oxygen Therapy Sales Company. Oxygen analyzer housing. 249,891, 10-10-78, Cl. D24-17.000.
Ruksenas, Miguel A.: *See*—
Rowland, Robert O.; and Ruksenas, Miguel A., 249,891, Cl. D24-17.000.
Russert, Frank, to Warner-Lambert Company. Candy dispenser. 249,868, 10-10-78, Cl. D9-224.000.
Schoeller, Armin E. Arm chair. 249,849, 10-10-78, Cl. D6-73.000.
Schoeller, Armin E. Table. 249,859, 10-10-78, Cl. D6-177.000.
Shaffer, James R.: *See*—
Maxwell, David E.; Shaffer, James R.; and Radtke, Lee, 249,876, Cl. D10-79.000.
Shambrook, Gerald. Pendant. 249,877, 10-10-78, Cl. D11-61.000.
Sokoloski, Edward B. A. Ring guard insert. 249,878, 10-10-78, Cl. D11-86.000.
Starr, Elizabeth R. Flag. 249,880, 10-10-78, Cl. D11-175.000.
Sun Electric Corporation: *See*—
Maxwell, David E.; Shaffer, James R.; and Radtke, Lee, 249,876, Cl. D10-79.000.
Sylvester, Gordon Elliot: *See*—
Genaro, Donald Michael; McGarvey, John Niel; and Sylvester, Gordon Elliot, 249,882, Cl. D14-61.000.
Teledyne Industries, Inc.: *See*—
Mackay, Frederick Gordon; and Keryluk, Horace Ted, 249,864, Cl. D7-122.000.
Texas Instruments Incorporated: *See*—
Lawrence, William James, 249,874, Cl. D10-38.000.
Tillander, Thomas, to Koret, Inc. Container for lingerie or the like. 249,869, 10-10-78, Cl. D9-224.000.
Tillander, Thomas, to Koret, Inc. Container for lingerie or the like. 249,870, 10-10-78, Cl. D9-224.000.
Tribeman, Peter D.: *See*—
Defreitas, Richard E.; Mitchell, Peter W.; Tribeman, Peter D.; Wilensky, Samuel; and Boucher, Joseph L., 249,885, Cl. D14-96.000.
Tse, Jackson, to Chin America Corp. Throat piece for tennis racket. 249,901, 10-10-78, Cl. D34-5.0ST.
Ungaro, Nicholas, to Peters-Revington Corporation. Table. 249,860, 10-10-78, Cl. D6-179.000.
U.S. Philips Corporation: *See*—
Zabransky, Fritz Eduard, 249,873, Cl. D10-26.000.
Vitamaster Industries, Inc.: *See*—
Brancaccio, Thomas J.; and Ragone, Bernardo P., 249,894, Cl. D24-37.000.
Warner-Lambert Company: *See*—
Russert, Frank, 249,868, Cl. D9-224.000.
Watson, Barry: *See*—
Aul, Robert J.; Breno, Philip J.; Zitkus, Wayne J.; Watson, Barry; and Maguire, Paul R., 249,892, Cl. D24-21.000.

Wilensky, Samuel: *See*—
Defreitas, Richard E.; Mitchell, Peter W.; Tribeman, Peter D.; Wilensky, Samuel; and Boucher, Joseph L., 249,885, Cl. D14-96.000.

Willinger, Allan H., to Willinger Bros., Inc. Anchor for artificial aquarium plant. 249,879, 10-10-78, Cl. D11-146.000.

Willinger, Allan H., to Willinger Bros., Inc. Air stone. 249,897, 10-10-78, Cl. D30-12.000.

Willinger Bros., Inc.: *See*—
Willinger, Allan H., 249,879, Cl. D11-146.000.
Willinger, Allan H., 249,897, Cl. D30-12.000.

Wolder, Herbert: *See*—
Anderka, Gerold; Reif, Ulrich; and Wolder, Herbert, 249,887, Cl. D19-43.000.

Wright, Owen Mortimer, to Ofrex Group Limited. Staple tacker. 249,865, 10-10-78, Cl. D8-49.000.

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Zawicki, Stephanie S.: *See*—
Zawicki, Walter; and Zawicki, Stephanie S., 249,902, Cl. D34-13.00A.

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Zitkus, Wayne J.: *See*—
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CLASSIFICATION OF PATENTS

ISSUED OCTOBER 10, 1978

NOTE.—First number, class; second number, subclass; third number, patent number

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84 4,118,802
132 4,118,803
340 4,118,804

CLASS 3

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1.4 4,118,806
13 4,118,808

CLASS 4

172.19 4,118,809
173 R 4,118,810

CLASS 5

62 4,118,811
92 4,118,812
337 4,118,813

CLASS 8

2.5 A 4,119,397
2.5 R 4,119,398
10.2 4,119,399

CLASS 9

6 P 4,118,814

CLASS 12

7.9 4,118,815

CLASS 13

32 4,119,792

CLASS 14

69.5 4,118,816
71.3 4,118,817

CLASS 15

36 4,118,818
49 R 4,118,819
53 AB 4,118,820
104.92 4,118,821
121 4,118,822
176 4,118,823
244 R 4,118,824
250.32 4,118,825
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CLASS 16

137 4,118,827

CLASS 17

1 F 4,118,828
11 4,118,829
21 4,118,830
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CLASS 19

304 4,118,832

CLASS 23

230 B 4,119,401
4,119,402
232 E 4,119,404
232 R 4,119,403

CLASS 24

68 CD 4,118,833
68 TT 4,118,834
73 MC 4,118,835
73 SA 4,118,836
75 4,118,837
115 R 4,118,838
205.1 R 4,118,839
239 4,118,840

CLASS 26

18.6 4,118,841

CLASS 28

218 4,118,842
255 4,118,843

CLASS 29

27 C 4,118,844
33 K 4,118,845
90 R 4,118,846
156.8 R 4,118,847
159.2 4,118,848
240 4,118,849
243.52 4,118,850
283 4,118,851
4,118,852
424 4,118,853
428 4,118,854
447 4,118,855
511 4,118,856
574 4,118,857
622 4,118,858
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623.5 4,118,860
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195 4,118,863
276 4,118,864
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CLASS 32

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CLASS 33

164 C 4,118,867
169 R 4,118,868
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CLASS 34

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174 4,118,875

CLASS 35

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CLASS 36

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CLASS 42

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17 4,118,882
43.16 4,118,883
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CLASS 44

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CLASS 46

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CLASS 47

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28 R 4,118,890
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CLASS 48

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CLASS 51

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170 EB 4,118,897
216 LP 4,118,898
237 R 4,118,899
281 R 4,118,900

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292 4,118,916
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341 4,118,918

CLASS 57

34 R 4,118,919
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140 R 4,118,921

CLASS 58

23 BA 4,118,922
88 B 4,118,923
127 R 4,118,924

CLASS 60

39.05 4,118,925
39.06 4,118,926
39.16 R 4,118,927
255 4,118,928
262 4,118,929
266 4,118,930
444 4,118,931
500 4,118,932
647 4,118,934
662 4,118,935
720 4,118,936

CLASS 61

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CLASS 62

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176 C 4,118,945
514 R 4,118,946
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CLASS 63

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CLASS 64

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23 4,118,954

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111 4,119,426
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287 4,119,428

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CLASS 68

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CLASS 69

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CLASS 70

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98 4,119,432
118 4,119,433

CLASS 72

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239 4,118,967
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410 4,118,971

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55 4,118,973
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118 4,118,976
141 R 4,118,977
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193 R 4,118,979
194 C 4,118,980
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194 R 4,118,982
290 V 4,118,983
295 4,118,984
346 4,118,985
351 4,118,986
422 R 4,118,987
425.4 R 4,118,988
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714 4,118,990
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37 4,118,993
61 4,118,994
245 S 4,118,995
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417 4,118,997
421 R 4,118,998
475 4,118,999
479 4,119,000

CLASS 75

0.5 R 4,119,453
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25 4,119,455
122 4,119,456
134 N 4,119,457
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CLASS 82

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CLASS 83

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341 4,119,003
661 4,119,004

CLASS 84

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242 4,119,008
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CLASS 89

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CLASS 90

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CLASS 96

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100 4,119,467
288 Q 4,119,478
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CLASS 110

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121.12 4,119,048
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CLASS 114

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CLASS 115

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CLASS 118

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32 SP 4,119,065
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117 R 4,119,068
119 A 4,119,071
119 EC 4,119,070
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188 B 4,119,077

CLASS 124

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CLASS 125

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270 4,119,083
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132 R 4,119,094
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194 4,119,096
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349 R 4,119,099
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351 4,119,101
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419 PS 4,119,103

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387 4,119,116
456 4,119,117
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122 4,119,123

CLASS 160

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CLASS 141

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100 4,119,126

CLASS 148

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2 4,119,442
12.1 4,119,443
16.6 4,119,444
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52 G 4,119,129

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41.76 4,119,130
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CLASS 156

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73.4 4,119,448
73.5 4,119,449
199 4,119,450
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244.19 4,119,452
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4,119,481
351 4,119,482
655 4,119,483
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CLASS 160

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349 R 4,119,134

CLASS 162

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CLASS 164

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121 4,119,136
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448 4,119,138

CLASS 165

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67 4,119,140
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104 S 4,119,142
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175 4,119,144

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266 4,119,149
276 4,119,150
298 4,119,151
339 4,119,145

CLASS 169

25 4,119,152
75 4,119,153

CLASS 171

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CLASS 172

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386 4,119,156
477 4,119,157
704 4,119,158

CLASS 173

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CLASS 174

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68 R 4,119,794

CLASS 175

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CLASS 176

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78 4,119,490

CLASS 177

3 4,119,161
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CLASS 178

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69.1 4,119,796

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1 GQ 4,119,798
1 VC 4,119,797
2 EA 4,119,800
6 R 4,119,801
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15 AT 4,119,803
15 FD 4,119,802
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18 FC 4,119,805
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100.4 D 4,119,812
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CLASS 184

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CLASS 190

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28 VB 4,119,492
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50 AA 4,119,818
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159 R 4,119,821
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CLASS 204

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130.4 4,119,829
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18 PF 4,119,592
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859 R 4,119,681
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CLASS 269

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CLASS 270

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415 R 4,119,329
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17	4,119,862
55	4,119,863

CLASS 292

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CLASS 294

1 R	4,119,337
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CLASS 296

1 S	4,119,339
137 B	4,119,340
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CLASS 297

80	4,119,342
264	4,119,343
385	4,119,344

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34	4,119,347
43	4,119,348
87	4,119,350

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6 M	4,119,351
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118	4,119,865
147	4,119,866
225 C	4,119,867
253	4,119,868
296 R	4,119,869
355	4,119,870
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CLASS 308

9	4,119,375

CLASS 310

56	4,119,873
61	4,119,872
90	4,119,874
248	4,119,875

CLASS 312

198	4,119,376
344	4,119,377

CLASS 313

231.4	4,119,876
318	4,119,877
325	4,119,878
330	4,119,879
348	4,119,880
360	4,119,881
411	4,119,882
414	4,119,883
417	4,119,884
479	4,119,885

CLASS 315

101	4,119,886
	4,119,887
205	4,119,888
248	4,119,889
377	4,119,890
389	4,119,891

CLASS 316

19	4,119,378

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138	4,119,892
178	4,119,893
221 D	4,119,894
254	4,119,895
266	4,119,896
331	4,119,897
341	4,119,898
459	4,119,899
587	4,119,900
685	4,119,901
696	4,119,902

CLASS 320

1	4,119,903
48	4,119,904

CLASS 323

21	4,119,905
22 T	4,119,906
105	4,119,907

CLASS 324

3	4,119,908
30 R	4,119,909
83 R	4,119,910
208	4,119,911

CLASS 325

58	4,119,912
113	4,119,913
446	4,119,914
452	4,119,915

CLASS 328

62	4,119,916
67	4,119,917
165	4,119,918

CLASS 329

103	4,119,919

CLASS 330

43	4,119,920
49	4,119,921
86	4,119,922
284	4,119,923
288	4,119,924

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1 A	4,119,925
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11	4,119,927
94.5 M	4,119,929
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7.51	4,119,930

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CLASS 335

167	4,119,935

CLASS 337

303	4,119,936

CLASS 338

308	4,119,937

CLASS 339

75 MP	4,119,357
111	4,119,358
128	4,119,359
217 S	4,119,360

CLASS 340

1 R	4,119,938
	4,119,939
5 H	4,119,940
5 R	4,119,941
6 R	4,119,942
52 F	4,119,943
58	4,119,944
146.1 AQ	4,119,945
146.3 AG	4,119,947
146.3 Q	4,119,946
151	4,119,948
309.1	4,119,952
324 AD	4,119,953
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337	4,119,957
347 AD	4,119,960
347 DD	4,119,961
347 SY	4,119,958
	4,119,959
407	4,119,811
524	4,119,950
552	4,119,951
630	4,119,949

CLASS 343

7.7	4,119,962
	4,119,966
17.2 PC	4,119,963
17.7	4,119,964
18 C	4,119,965
100 ME	4,119,968
100 PE	4,119,967
108 M	4,119,969
727	4,119,970
768	4,119,971
844	4,119,972

CLASS 346

75	4,119,973
145	4,119,974
	4,119,975

CLASS 350

1.1	4,119,361
96.18	4,119,362
96.20	4,119,363
114	4,119,364
293	4,119,365
295	4,119,366
333	4,119,367
360	4,119,368

CLASS 351

49	4,119,369

CLASS 352

130	4,119,370
	4,119,371

CLASS 353

26 R	4,119,372

CLASS 354

5	4,119,976
7	4,119,977
38	4,119,978
50	4,119,979
150	4,119,980
152	4,119,981
155	4,119,982
197	4,119,983
219	4,119,984
223	4,119,985
258	4,119,986
268	4,119,987
289	4,119,988
298	4,119,989
317	4,119,990
320	4,119,991

CLASS 355

3 R	4,119,373
32	4,119,374

CLASS 356

4	4,119,379
244	4,119,381
249	4,119,382

CLASS 357

4	4,119,992
16	4,119,994
23	4,119,993
	4,119,995
	4,119,996
36	4,119,997
44	4,119,998

CLASS 358

4	4,119,999
8	4,120,000
11	4,120,001
108	4,120,004
111	4,120,002
142	4,120,003

CLASS 360

61	4,120,005
64	4,120,007
70	4,120,008
71	4,120,009
72	4,120,006
103	4,120,010
111	4,120,011
133	4,120,012

CLASS 361

180	4,120,013
196	4,120,014
227	4,120,015
228	4,120,016
	4,120,017
385	4,120,019
386	4,120,020
388	4,120,021
395	4,120,022

CLASS 362

16	4,120,023
96	4,120,024
153	4,120,025
231	4,120,026
333	4,120,018
352	4,120,027

CLASS 364

200	4,120,028
	4,120,029
	4,120,030
464	4,120,031
510	4,120,032
	4,120,033
518	4,120,034
602	4,120,035
705	4,120,036
	4,120,037
	4,120,038
	4,120,039
709	4,120,040
712	4,120,041
900	4,120,043
	4,120,044
	4,120,045

CLASS 365

2	4,120,042
8	4,120,046
227	4,120,047
230	4,120,049
239	4,120,048

CLASS 366

75	4,120,050
142	4,120,051
189	4,119,304

CLASS 400

124	4,119,383
144.2	4,119,384
215.3	4,119,385

CLASS 401

138	4,119,386

CLASS 404

69	4,119,387

CLASS 405

30	4,118,937
145	4,118,938
174	4,118,940
204	4,118,941
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CLASS 408

111	4,119,388

CLASS 415

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CLASS 416

96 R	4,119,390

CLASS 417

26	4,119,391

CLASS 418

201	4,119,392

CLASS 422

56	4,119,405
58	4,119,407
81	4,119,406
169	4,119,408
298	4,119,400

CLASS 423

53	4,119,696
82	4,119,697
	4,119,698
109	4,119,699
156	4,119,700
213.2	4,119,701
235	4,119,702
239	4,119,703
299	4,119,704
507	4,119,705
580	4,119,706
592	4,119,707
659	4,119,708

CLASS 424

1	4,119,709
45	4,119,724
54	4,119,711
63	4,119,712
95	4,119,713
199	4,119,714
216	4,119,715
220	4,119,716
238	4,119,717
241	Re.29,799
248.51	4,119,718
250	4,119,719
258	4,119,720
263	4,119,721
270	4,119,722
273 R	4,119,723
274	4,119,725
	4,119,726
275	4,119,727
282	4,119,710
324	4,119,728
330	4,119,729
341	4,119,730

CLASS 425

222	4,119,393
390	4,119,394

CLASS 426

20	4,119,731
36	4,119,732
46	4,119,733
72	4,119,734
264	4,119,735
386	4,119,736
535	4,119,737
548	4,119,738
573	4,119,739
631	4,119,740
641	4,119,741
	4,119,742

CLASS 427

44	4,119,743
45	4,119,744
66	4,119,745
381	4,119,746
424	4,119,747

CLASS 428

36	4,119,748
99	4,119,749
105	4,119,750
131	4,119,751
198	4,119,752
234	4,119,753
255	4,119,754
284	4,119,755
295	4,119,756
311	4,119,757
379	4,119,758
407	4,119,759
410	4,119,760
472	4,119,761
524	4,119,762
563	4,119,763
592	4,119,764
683	4,119,765

CLASS 429

70	4,119,766
105	4,119,767
111	4,119,768
112	4,119,769
152	4,119,770
178	4,119,771
204	4,119,772

CLASS 431

11	4,119,395

CLASS 432

106	4,119,396

CLASS 521

27	4,119,581
28	4,119,580
103	4,119,583
112	4,119,582
118	4,119,585
127	4,119,584
137	4,119,586

CLASS 526

31	4,119,616
64	4,119,613
130	4,119,773
270	4,119,579
292	4,119,610

CLASS 528

99	4,119,609
139	4,119,611
188	4,119,608
232	4,119,612
283	4,119,614
343	4,119,615
360	4,119,617

CLASS 536

21	4,119,774

CLASS 542

441	4,119,776

CLASS 544

6	4,119,777
26	4,119,778
28	4,119,775
215	4,119,779

CLASS 548

313	4,119,782
329	4,119,780
337	4,119,781

CLASS 560

43	4,119,783
44	4,119,784
53	4,119,785
	4,119,786
121	4,119,787
152	4,119,788
161	4,119,789
198	4,119,553

CLASS 562

503	4,119,662
	4,119,663
	4,119,664
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CLASS 568

768	4,119,791
855	4,119,790

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D2—	229	249,826
	232	249,827
D6—	56	249,828
		249,829
		249,830
		249,831
		249,832
		249,833
		249,834
		249,835
	57	249,836
	67	249,837
		249,838
		249,839
		249,840
		249,841
		249,842
	69	249,843
		249,844
		249,845
		249,846
		249,847
	70	249,848
	73	249,849
	75	249,850
		249,851
		249,852
		249,853
	99	249,854
	148	249,855
		249,856
	175	249,857
	177	249,858
		249,859
	179	249,860
		249,861
	194	249,862
D7—	121	249,863
	122	249,864
D8—	49	249,865
	343	249,871
D9—	130	249,866
	203	249,867
	224	249,868
		249,869
		249,870
	245	249,872
D10—	26	249,873
	38	249,874
	69	249,875
	79	249,876
D11—	61	249,877
	86	249,878
	146	249,879
	175	249,880
D12—	100	249,881
D13—	33	249,883
D14—	61	249,882
	86	249,884
	96	249,885
D15—	135	249,886
D19—	43	249,887
	51	249,888
D23—	40	249,889
	97	249,890
D24—	17	249,891
	21	249,892
	36	249,893
	37	249,894
D25—	97	249,895
D27—	03	249,896
D30—	12	249,897
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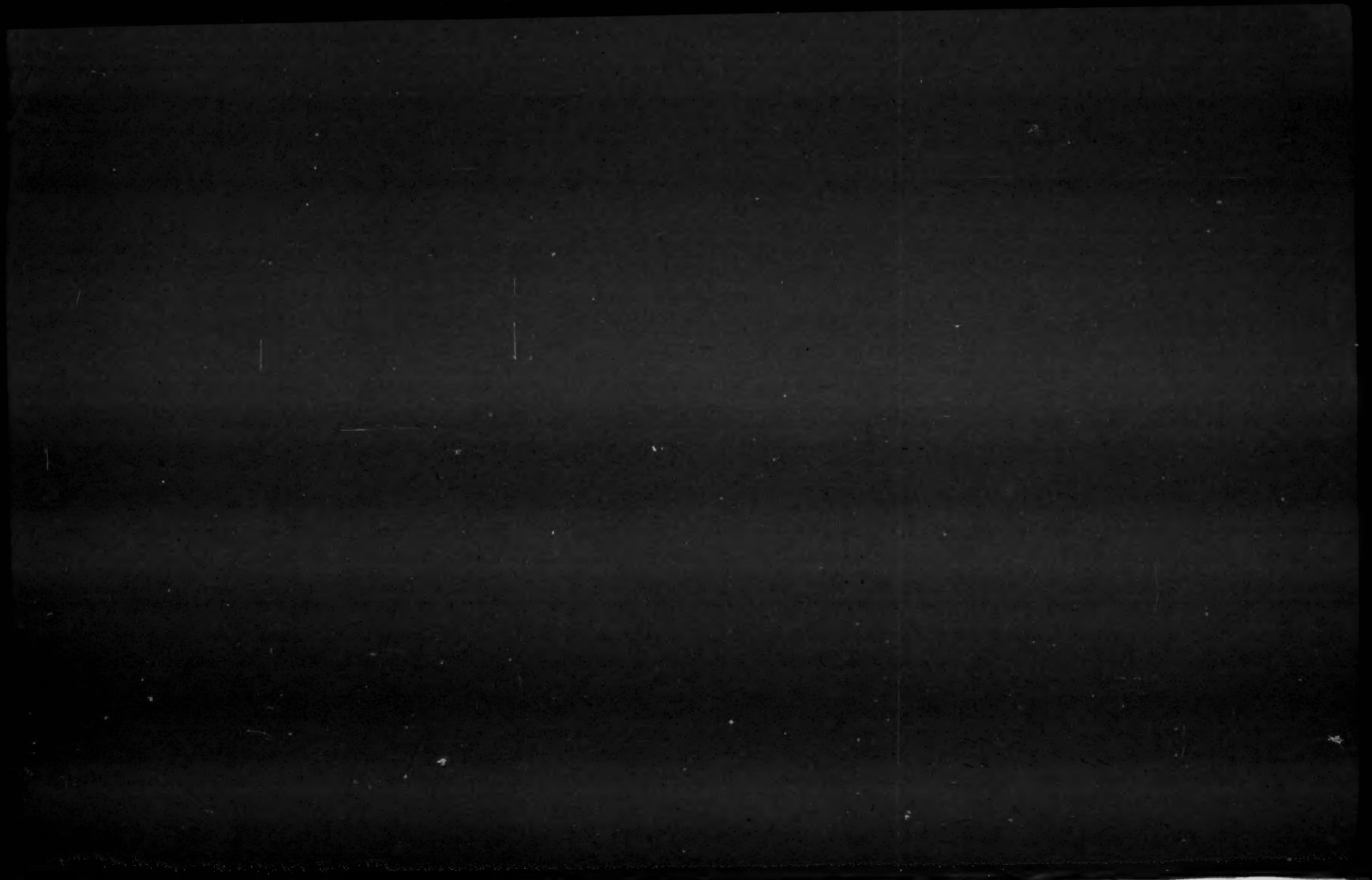
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